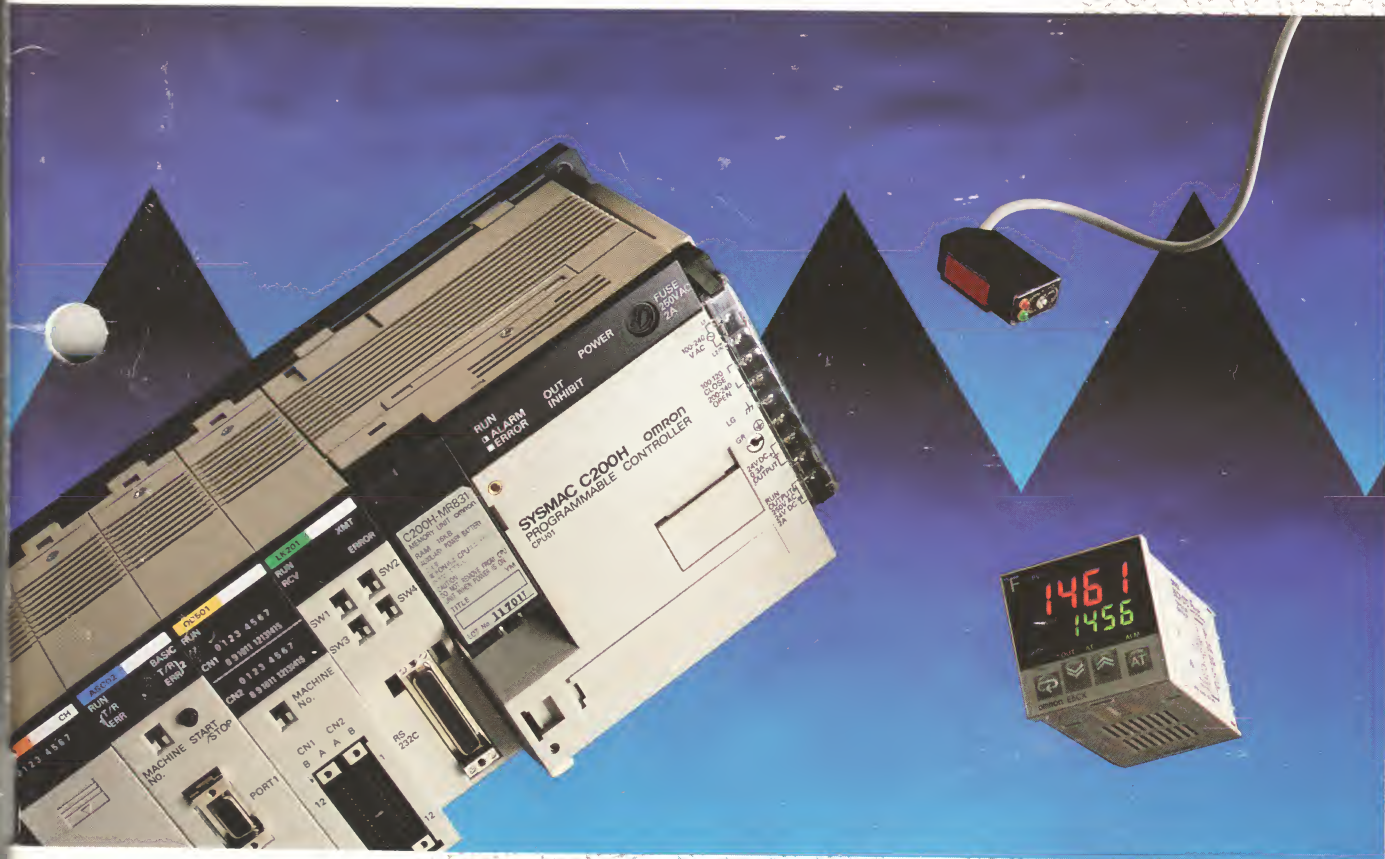


AUTOMATION PLANNER'S SOURCEBOOK



PROGRAMMABLE CONTROLLERS
PHOTOELECTRIC & PROXIMITY SENSORS
LIMIT SWITCHES
COUNTERS & TIMERS
PROCESS & TEMPERATURE CONTROLLERS
AND OTHER CONTROL PRODUCTS

OMRON

INTRODUCTION

YOUR INDUSTRIAL CONTROLS RESOURCE

VERSATILITY, OUR SPECIALTY

Omron offers more than 100,000 products, including a wide selection of programmable controllers, photoelectric and proximity sensors, limit switches, timers, counters, and process and temperature controllers. You'll find each line contains products especially designed to solve tough application problems as well as general-purpose controls.

USING THE SOURCEBOOK

This short-form catalog provides a comprehensive overview of industrial controls from Omron's Factory Automation Systems division. Key features and specifications are compared side by side for each product line. You can determine at a glance the models that meet your requirements before you request full specifications. For your convenience, postage-paid reply cards are included to speed your request for additional product information.

NATIONWIDE SALES NETWORK . . .

With more than 100 local stocking distributors, Omron can deliver your control components promptly. Your Omron distributor can provide expert application and sales assistance to give you a fully integrated system.

. . . BACKED BY INTERNATIONAL SUPPORT

Omron maintains an international network of 52 subsidiaries and affiliates that can provide you with replacement components virtually anywhere in the world.

OMRON®

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PROGRAMMABLE CONTROLLERS

The right controller for your application

Omron's SYSMAC C-Series controllers give you the power and flexibility to handle a full manufacturing operation or single machine control. From 20 I/O to thousands of I/O, Omron can provide a system to meet your control needs.

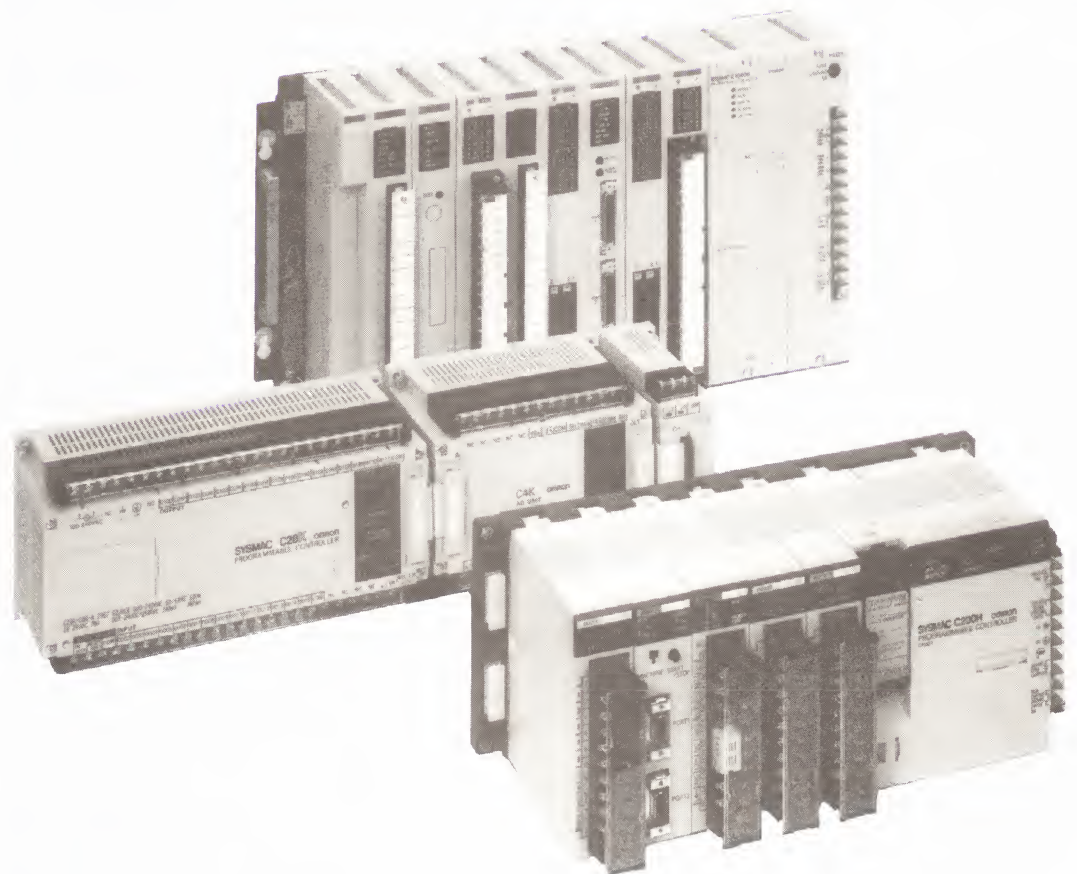
It's incredibly easy to configure a network. All controllers are designed to exchange information with other C-Series controllers and with host computers.

The Omron difference

All Omron C-Series controllers share the same programming language, peripherals and communications protocol.

We were first in the market with large PLCs that network smoothly with the full range of small controllers. In fact, programs are upwardly compatible from micro controllers, and system expansion can employ a mixture of racks from different C-Series controllers as shown on pages 8-9.

Innovation sets Omron apart from the rest. The growing trend toward computer integrated manufacturing (CIM) strategies has made Omron's controllers and communications systems popular choices because a range of networking options are available.



Designed for simple networking

All C-Series controllers share common communications protocols:

- SYSBUS for communications with remote I/O, relay terminal blocks and stand-alone optical I/O
- SYSWAY for host computer communications

A controller can communicate with a computer over three media:

- Twisted pair
- Coaxial cable
- Fiber-optic cable

Omron's C200H, C500, C1000H and C2000H controllers offer true peer-to-peer communications that can be configured in multiple levels.

A new high-end PLC communications network, called SYSMAC LINK, offers fast throughput (2 Mbps) of large amounts of data (2 Kbytes/message). Its performance compares favorably to local area networks with only a fraction of the investment. A variety of other communications network configurations are also available.

Easy to program

All Omron C-Series controllers can be programmed in ladder logic or mnemonic commands.

In addition to standard ladder instructions, the instruction sets include:

- shift registers
- four-function math
- trigonometric calculation
- immediate I/O refresh
- data manipulation
- jumps
- subroutine calls
- scan length control
- program flow control

Functions can be programmed to replace mechanical cam and drum switches as well as other discrete controls.

Omron's programming technique is the **simplest and most straightforward** of any other manufacturer. There are no cumbersome rules or syntax limitations; complex branching and logic can be programmed easily.

Programs are upwardly compatible from micro controllers all the way up to large rack systems. This eliminates the cost of retraining when growth dictates changing to a larger controller. Extensive diagnostics, both built-in and programmable, identify system malfunctions to reduce troubleshooting of the system.

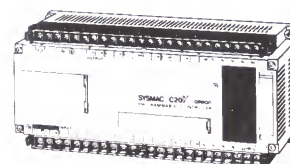
Learn programming hands-on

Whether you're a first-time user or are familiar with other programmable controllers, Omron offers a variety of training courses to meet your needs. It's hard to appreciate the flexibility of Omron's programming power until you work with our controllers.

Two self-study training kits are available to teach you the basics about using the C20K family and the C200H family of controllers. For extended hands-on training and assistance in configuring a system, contact Omron's Training Center or our nationwide network of distributors with certified trainers on staff.

On-site training, using your particular application as the focus, can be arranged with the Training Department Manager.

PROGRAMMABLE CONTROLLERS



MODEL

C20K/C28K/C40K/C60K

Dimensions

110 H x 250 W x 100 D mm (C20K and C28K)
(4.33 x 9.84 x 3.94 in)
110 H x 300 W x 100 D mm (C40K)
(4.33 x 11.81 x 3.94 in)
140 H x 350 W x 100 D mm (C60K)
(5.51 x 13.78 x 3.94 in)

Description

This family of micro controllers offers the most flexible I/O expansion options. Block type PLC provides 20, 28, 40 or 60 I/O. Expansion can be mixed I/O blocks or 16-point and 4-point modules. Advanced instruction set includes math, compare, shift register, jump, subroutine and diagnostic functions. Offers high-speed and reversible counters that replace drum sequencers. Full networking capability with host computers and other Omron C-Series controllers.

Scan time

10 msec/1K instructions

I/O range

20 to 148 I/O

Memory

1,194 words

Instruction set

49 instructions

Programming

Ladder logic
Mnemonic code

I/O modules

4, 16, 20, 28, 40 or 60 points

Analog I/O, max.

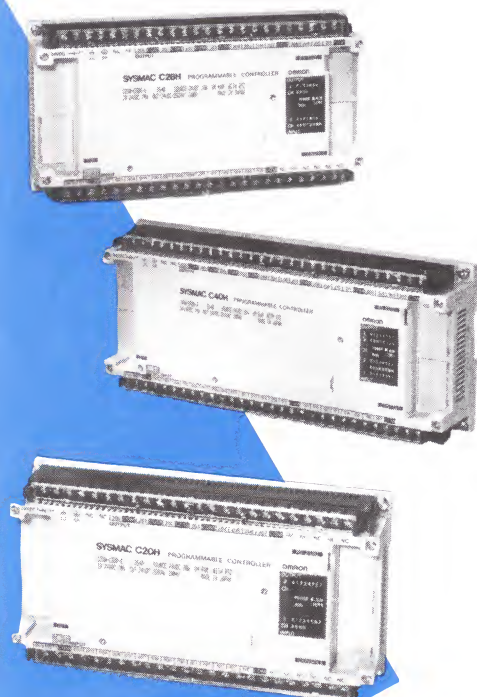
16 inputs or 4 outputs

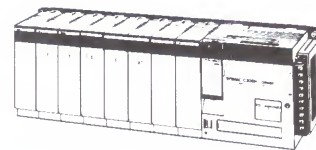
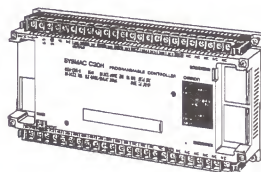
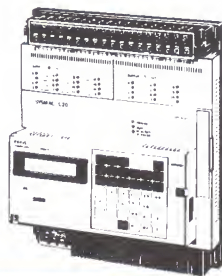
Special-purpose I/O units

Analog input/output units
Externally-set timer, 4 timers

Communications

Host computer
Remote I/O Slave





C20

250 H x 210 W x 59.5 D mm
(9.84 x 8.27 x 2.34 in)

Flat-pack ready-to-use controller expands with same-size I/O blocks. Choose 26 AC or 28 DC local I/O. Use up to 2 expansion units, configured for 26 or 52 AC I/O and 28 or 56 DC I/O. Designed to save space in small, shallow control panels. Uses C-Series peripherals. Communicates with host computers and other Omron C-Series controllers.

10 msec/1K instructions

20 to 140 I/O

1,194 words

37 instructions

Ladder logic
Mnemonic code

26 or 52 points AC,
28 or 56 points DC

Not available

Not available

Host computer
Remote I/O Slave

C20H/C28H/C40H

30 H x 250 W x 64 D mm
(C20H and C28H)
(5.12 x 9.84 x 2.52 in)
130 H x 300 W x 64 D mm (C40H)
(5.12 x 11.81 x 2.52 in)

Slim block-style controllers provide high-speed throughput and exceptional programming flexibility. They have a built-in RS-232 port for direct host computer communications and a clock/calendar for real-time control. Instruction set includes advanced math, enhanced data conversion, reversible and high-speed drum counters and much more. Expand the system with I/O expansion blocks of 20, 28 or 40 I/O. To access special I/O capabilities for position control, analog I/O and ASCII/BASIC communications use a C200H I/O expansion rack.

2.5 msec/1K instructions

20 to 160 I/O

2.6K words

133 instructions

Ladder logic
Mnemonic code

20, 28 or 40 points

16 inputs or 8 outputs

High-speed counter, 75 kHz
Position control units, 1 or 2 axes
ASCII/BASIC unit
Temperature sensor input unit, 4 inputs
Externally-set timer, 4 timers

Host computer (RS-232 built in)
Peer-to-peer (using C200H expansion rack)

C200H

130 H x 435 W x 117 D mm
(8 slot rack)
(5.12 x 17.13 x 4.61 in)

Small rack-type controller offers big machine memory, I/O and communications for applications between 50 and 350 I/O. Large easy-to-use instruction set, fast processing time, and a wide choice of standard, high-density and special I/O can tackle tough control jobs. Network C200H with other C-Series controllers for remote I/O and peer-to-peer communications or use a host computer for data collection, programming, etc.

Less than 1 msec/1K instructions
of relay logic

48 to 640 I/O

2.6K or 6.6K words (1-4 words/instruction)

145 instructions

Ladder logic
Mnemonic code

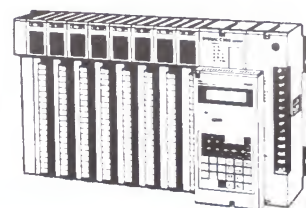
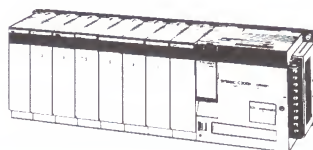
5, 8, 12, 16, 32 points discrete
128 points multiplexed I/O
8-point stand alone optical I/O

40 inputs or 20 outputs

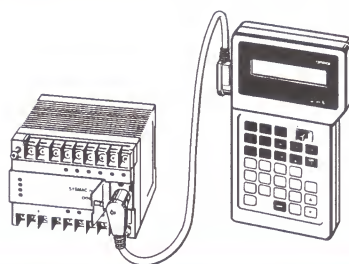
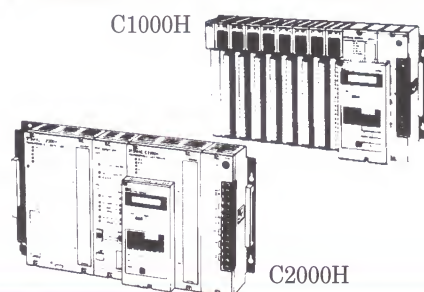
High-speed counter, 75 kHz
Position control unit, 1 or 2 axes
ASCII/BASIC unit
Temperature sensor input unit, 4 inputs
High-density I/O
Externally-set timer, 4 timers
Voice output unit
RF ID tag controller unit

Host computer
Peer-to-peer, multi-level
Remote I/O

PROGRAMMABLE CONTROLLERS



MODEL	C200H Plus (-CPU11)	C500
Dimensions	130 H x 435 W x 117 D mm (8 slot rack) (5.12 x 17.13 x 4.61 in)	250 H x 480 W x 100 D mm (9.84 x 18.90 x 3.94 in)
Description	Designed for Computer Integrated Manufacturing (CIM), the C200H-CPU11 offers a built-in bus connector for Omron's SYSMAC NET (local area network) and SYSMAC LINK (high-end PLC-to-PLC network). In addition to the same configuration as C200H, the C200H Plus offers a built-in clock/calendar and enhanced instruction set including trigonometric calculation, extended comparison capabilities. It uses the same racks and I/O modules as regular C200H.	Large rack-style system provides dependable control for applications between 100 and 512 I/O. Large instruction set and wide selection of special-application I/O units allow you to handle complex control jobs. Network C500 with other C-Series controllers from small C20K up to the larger C2000H. Shares the same peripherals and programming language as smaller controllers.
Scan time	Less than 1 msec/1K instructions of relay logic	5 msec/1K instructions
I/O range	48 to 640 I/O	100 to 512 I/O
Memory	2.6K or 6.6K words (1-4 words/instruction)	5.3K or 8K bytes (3-10 bytes/instruction)
Instruction set	159 instructions	71 instructions
Programming	Ladder logic Mnemonic code	Ladder logic Mnemonic code
I/O modules	5, 8, 12, 16, 32 points discrete 128 points multiplexed I/O 8-point stand alone optical I/O	8, 16, 24, 32, 64 points discrete 64 points multiplexed I/O 8-point stand alone optical I/O
Analog I/O, max.	40 inputs or 20 outputs	32 inputs or 16 outputs
Special-purpose I/O units	High-speed counter, 75 kHz Voice output module Position control unit, 1 or 2 axes ASCII/BASIC Unit Temperature sensor input unit, 4 inputs High-density I/O Externally-set timer, 4 timers RF ID tag controller unit	High-speed counter, 50 kHz High-speed drum counter, 50 kHz Position control unit, 1 or 2 axes Stepper motor controller ASCII/BASIC unit PID module, 1 loop Cam positioner RF ID tag controller unit
Communications	Host computer Peer-to-peer, multi-level Remote I/O Local Area Network	Host computer Peer-to-peer, multi-level Remote I/O Local Area Network



C1000H/C2000H

250 H x 480 W x 100 D mm
(single rack)
(9.84 x 18.90 x 3.94 in)

Rack-type, high-speed, high specification controllers offer fast throughput for applications with large volumes of I/O or complex logic. Ideal for 250 to 2,048 I/O (1,024 local and 1,024 remote in C1000H). Omron also offers a C2000H duplex CPU for redundant hot backup in critical processes. Expanded instruction set offers extensive data manipulation, math, program flow and communication capabilities. These controllers network with all other C-Series controllers and share the same peripherals. Use the same I/O and special purpose I/O units as C500.

Less than 0.5 msec/1K instructions of relay logic

100 to 2,048 I/O

8K, 16K, 24K, 32K words

174 instructions

Ladder logic
Mnemonic code

8, 16, 24, 32, 64 points discrete
64 points multiplexed I/O
8-point stand alone optical I/O

C1000H: 64 points
C2000H: 128 points

High-speed counter, 50 kHz
High-speed drum counter, 50 kHz
Position control unit, 1 or 2 axes
Stepper motor controller
ASCII/BASIC unit
PID module, 1 loop
Cam positioner
File memory unit, 128K or 256K RAM
RF ID tag controller unit

Host computer
Peer-to-peer, multi-level
Remote I/O
Local Area Network

SP10

68 H x 92 W x 81 D
(2.68 x 3.62 x 3.19 in)

Omron's small stand-alone controller replaces as few as three discrete components, such as relays and timers, for reliable machine control. The SP10 simplifies wiring, operational changes and program debugging. Convenient program-mable functions include reversible drum counter, 16 timers/counters, shift registers, and simple math and logic functions. User-selectable input filters help control errors due to input chattering and electrical noise. Memory cards conveniently store programs. Choose AC or DC supply voltage, relay or transistor outputs.

0.2 msec/100 instructions

6 inputs/4 outputs per unit,
maximum 4 units with link adapter

About 100 instructions

34 instructions

Ladder logic
Mnemonic code

6 inputs/4 outputs per unit

Not available

Not available

Not available

System expansion the easy way

Omron's programmable controllers let you expand your system with local I/O, remote I/O racks, and stand-alone fiber-optic remote I/O. The whole system goes together with the simplicity of building blocks.

The block style controllers C20K and C20H offer the most local expansion options. Choose expansion blocks with the same combination of I/O as the CPU, or in 4- and 16-point units for C20K. The C20 expands with flat pack units the same size as the CPU; a hinged bracket lets you mount them piggy-back for improved space savings.

Omron offers the ultimate flexibility in configuring remote I/O. Using C200H, C500, C1000H, C2000H racks and their I/O cards, remote I/O can be connected by two-conductor wire or fiber-optic cable. The small C200H can be master over several expansion racks of large rack style I/O modules.

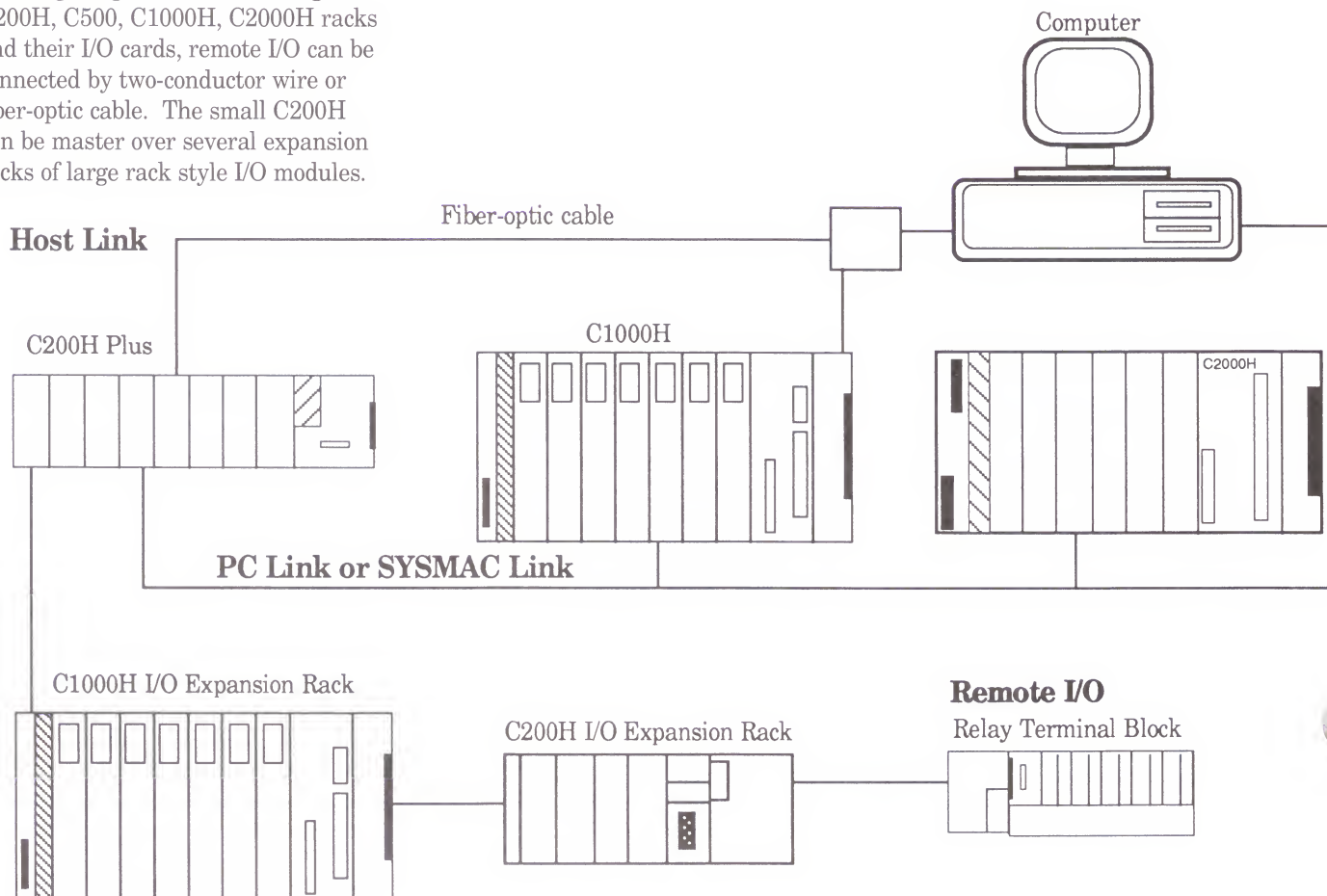
This provides great flexibility in system configuration and expansion. Complex operations can be handled locally by a large controller while it is supervised by a smaller one. The flexibility works both ways: C500, C1000H and C2000H controllers can be configured using a mixture of I/O, including small rack style units for expansion I/O.

Omron's unique stand-alone remote I/O units transmit eight points of data over fiber-optic cable at distances up to half a mile (800 meters). Distances can be increased using repeaters. These modules are ideal for I/O transmission between widely separated machines or facilities.

Fiber-optic advantages

Omron pioneered the use of fiber-optic data transmission on the factory floor in 1985. Fiber-optics solve the two problems associated with remote I/O racks and long-distance transmission from controller to host computer in a factory environment: electrical noise and distance limitations.

Welding machinery, motor starters and other high-frequency equipment contribute electrical noise that can create false signaling in data transmissions. Because the signal is converted to light, additional electrical interference is eliminated.



Transmission distances for hardwired systems are usually limited to about 200 meters (656 feet). Omron's fiber-optic system can extend as far as 800 meters (half a mile) and even farther using repeaters.

Recent innovations in fiber-optic manufacturing and termination techniques have now made this technology simple to use and affordable.

Decentralized control

Peer-to-peer communications using PC Link and SYSMAC Link offers the most desirable features of local area networks without the complexity and commitment to additional hardware. All controllers read from and write to a common data area so all can effectively share the same information at once. Up to 32 controllers may be put on a PC Link network.

Time-saving diagnostics

Omron's programmable controllers have machine and program diagnostics built in, making them easier to troubleshoot than other controllers and discrete component-based systems. Front panel indicators show error and alarm situations as well as normal I/O and program RUN status. Critical devices can be monitored and updated and controlled automatically—independent of scan—through programming techniques.

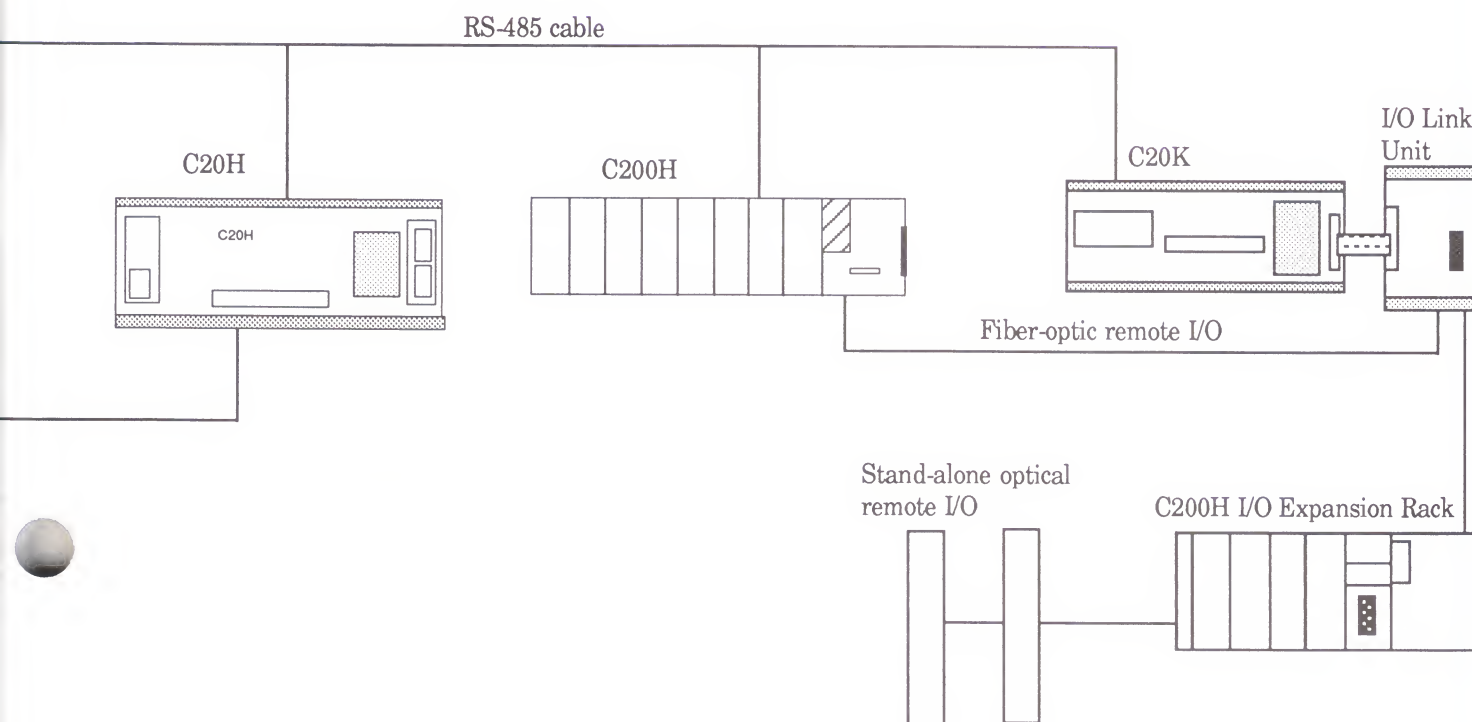
The CPU, power supply and many I/O cards are optically isolated to filter out electrical noise. This eliminates the need for special transformers that other controller manufacturers require. Omron effectively triple-filters incoming power to eliminate undesired electrical noise.

Family advantages

The programmers and peripherals for documentation and programming can be used with all C-Series controllers. Choose from hand-held, panel-mount, and lap-top programmers. A factory intelligent terminal (FIT) combines both personal computer features with dedicated ladder programming.

For program backup, Omron lets you store/load programs using commercially available audio cassette tape or EPROM chips. For printouts of programs and comments directly from the controller, use a printer interface unit.

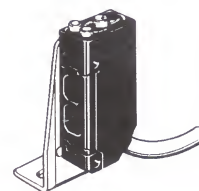
Omron's powerful SYSMATE ladder programming software for IBM PCs and compatibles combines cut/paste/move convenience for program writing and editing, and highlighted circuit continuity for easy debugging and monitoring.



PHOTOELECTRIC SENSORS

GENERAL-PURPOSE SENSORS

For most packaging, material handling, and industrial applications, Omron's general-purpose photoelectric sensors can solve your detection problem. They are shown from smallest to largest for easy comparison. These versatile sensors with built-in amplifiers simplify your selection and stocking because a single part number can give you all the options needed for the job. Be sure to see Omron's selection of special-purpose and fiber-optic sensors.



MODEL

E3V

Dimensions

37 H x 10.4 W x 18 D mm
(1.46 x 0.41 x 0.70 in)

Features

- Space-saving prewired DC sensors offer long sensing distances
- Sensitivity adjuster and stability indication allow fine tuning of sensor to installation
- Alarm output signals deteriorating sensing conditions
- Dust-tight, watertight amplifier meets IP67; fully encapsulated circuit withstands vibration and mechanical shock
- Switch selectable Light-ON/Dark-ON operation

Detection method and sensing distances

Through beam type

7 m (23 ft) E3V-7□43S

Retroreflective

Polarized: 0.1 to 2 m (0.32 to 6.6 ft)
E3V-R2□43S
Long-distance: 0.1 to 3 m (0.32 to 9.8 ft)
E3V-R3□43S

Diffuse reflective

Standard: 70 cm (2.3 ft) E3V-DS70□43S
Short-distance: 0.5 to 8 cm (0.2 to 3.2 in)
E3V-DS8□43S

Supply voltage

12 to 24 VDC, ±10%

Control outputs

AC

—

DC

NPN transistor, 100 mA, 40 VDC max.
E3V-□C43S
PNP transistor, 100 mA, 40 VDC max.
E3V-□B43S

Alarm

NPN, 50 mA max.
PNP, 50 mA max.

Response time

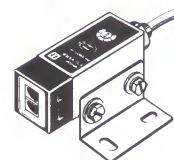
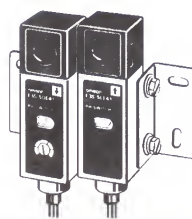
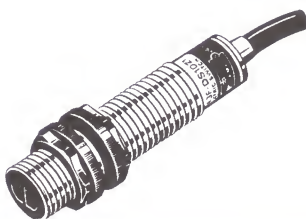
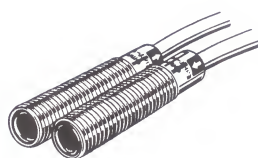
1 ms max.

Materials

Plastic body

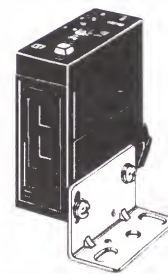
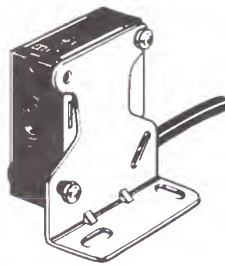
Enclosure rating

IP67

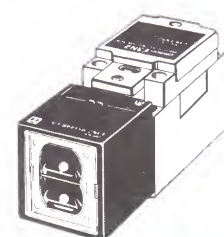
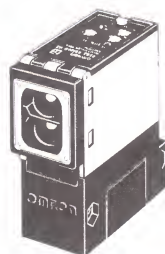
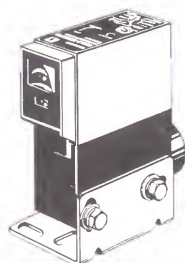


E3HT	E3F	E3S	
8.5 dia. x 41.5 L mm (0.33 x 1.63 in)	18.5 dia. x 65, 70 or 90 L mm (0.73 x 2.56, 2.76 or 3.54 in)	74.6 H x 20 W x 23 D mm (2.94 x 0.79 x 0.91 in)	23 H x 20.4 W x 66.6 D mm (0.91 x 0.80 x 2.62 in)
<ul style="list-style-type: none"> ■ Small M8 size threaded sensor ideal for space-confined installation ■ Cost-effective device for general detection 	<ul style="list-style-type: none"> ■ Easy-to-install M18 size threaded sensors available prewired or connector-ready for Micro-Change® cordsets ■ Cost-effective choice for general detection applications ■ Polarized retroreflective type is ideal for detecting shiny objects ■ Simple to align with operation indicator at rear of housing ■ Choose solid-state AC and DC outputs ■ DC models offer wire-selectable Light-ON/Dark-ON operation 	<ul style="list-style-type: none"> ■ Small prewired DC sensor available in horizontal and vertical mounting styles ■ Wire selectable Light-ON/Dark-ON operation ■ Sensitivity adjuster and stability indication allow fine-tuning of sensor to installation ■ Rugged diecast metal body versions available ■ Fast response time 	
1 m (3.28 ft) E3HT-1E□	3 m (9.84 ft) E3F-3□□	2 m (6.6 ft) in plastic body E3S-2□4□ 5 m (16.4 ft) in metal body E3S-5□4□	
—	Polarized: 0.1 to 1.5 m (0.32 to 4.92 ft) E3F-R1□4 Long-distance: 0.1 to 2 m (0.32 to 6.56 ft) E3F-RS□□	2 m (6.6 ft) in metal body E3S-R2□4□	
3.5 cm (1.38 in) E3HT-DS3E□	10 cm (3.94 in) E3F-DS10□□	1 to 10 cm (0.4 to 3.9 in) in plastic body E3S-DS10□4□ 30 cm (11.8 in) in metal body E3S-DS30□4□	
12 to 24 VDC	24 to 240 VAC, 50/60 Hz 12 to 24 VDC	12 to 24 VDC	
—	SCR (E3F-□□□Z□)	—	
NPN, 80 mA with 1.5 to 3 mA constant current source	NPN open collector (E3F-□□□C4) PNP open collector (E3F-□□□B4)	NPN: 80 mA max. load, 1.5 to 4 mA constant current source, 24 VDC E3S-□□E4□ PNP: 100 mA max. load 24 VDC E3S-□□B4□	
—	—	—	
5 ms max. (separate type) 3 ms max. (diffuse type)	30 ms max. (AC type) 2.5 ms max. (DC type)	3 ms max. (separate types) 1 ms max. (reflective types)	
Nickel-plated brass body	Plastic housing	Plastic or diecast zinc body	
IP66	IP66	IP65 (plastic), IP67 (metal)	

PHOTOELECTRIC SENSORS



MODEL		E3JK	E3JM
Dimensions		50 H x 17.6 W x 50 D mm (1.97 x 0.69 x 1.97 in)	65 H x 25 W x 75 D mm (2.56 x 0.98 x 2.95 in)
Features		<ul style="list-style-type: none"> ■ Complementary relay output provides both NO and NC from a single sensor ■ Universal AC/DC supply voltage ■ Slim, small housing fits narrow installation spaces ■ Polarized retroreflective types accurately detects shiny objects ■ Separate models for Light-ON/Dark-ON operation 	<ul style="list-style-type: none"> ■ Universal AC/DC supply voltage ■ Easy-to-wire terminal block ■ Built-in multifunction timer module provides selectable ON-delay, OFF-delay and one-shot output with 0.1 to 5 sec. range ■ Switch selectable Light-ON/Dark-ON operation ■ Polarized retroreflective types accurately detect shiny objects
Detection method and sensing distances	Through beam type	5 m (1.64 ft) E3JK-5M□□	10 m (32.8 ft) E3JM-10□4(T)-US
	Retroreflective	Polarized: 2.5 m (8.2 ft) E3JK-R2M□ Long-distance: 4 m (13.12 ft) E3JK-R4M□	Polarized: 4 m (13.1 ft) E3JM-R4□4(T)-US
	Diffuse reflective	30 cm (11.8 in) E3JK-DS30M□	70 cm (2.3 ft) E3JM-DS70□4(T)-US
Supply voltage		24 to 240 VAC, 50/60 Hz 12 to 240 VDC	24 to 240 VAC, 50/60 Hz 12 to 240 VDC
Control outputs	AC	SPDT relay, 3 A, 250 VAC (E3JK-□□M□)	SPDT relay, 3 A, 250 VAC, (E3JM-□□M4□-US)
	DC	NPN & PNP complementary outputs E3JK-R2H□-G	NPN open collector (E3JM-□□S4□-US) PNP open collector (E3JM-□□R4□-US)
	Alarm	—	—
Response time		30 ms max. (relay) 3 ms max. (transistor)	5 ms max. without timer 0.1 to 5 sec. (adjustable) with timer (E3JM-□□4T-US)
Materials		Plastic	Plastic
Enclosure rating		IP64	IP66



E3A2

75 H x 26 W x 75.3 D mm
(2.95 x 1.02 x 2.95 in)

- Universal AC/DC supply voltage
- Plug-in interchangeable outputs include relay (supplied) or optional SCR AC output and NPN or PNP DC output
- Switch selectable Light-ON/Dark-ON operation
- Built-in timer models provide ON-delay, OFF-delay and one-shot
- Polarized retroreflective type detects shiny objects

E3B2

90.3 H x 36 W x 80.3 D mm
(3.56 x 1.42 x 3.16 in)

- Universal AC/DC power supply
- Long sensing distance for reflective sensors
- Built-in independent ON- and OFF-delay timers available
- Polarized retroreflective type detects shiny objects
- Easy-to-service plug-in construction
- Access cover protects settings
- Switch selectable Light-ON/Dark-ON operation
- Enhanced mutual interference protection for side-by-side mounting

E3N2

50 H x 40 W x 115 D mm
(1.97 x 1.58 x 4.53 in)

- Limit switch style with plug-in construction and rotatable sensing head for easy installation
- Optional plug-in timer units for ON-delay, OFF-delay, one-shot, delayed one-shot and independent ON-delay and OFF-delay
- Long sensing distances
- Enhanced mutual interference protection and short-circuit protection all models
- Unstable switching condition alarm output on DC types

10 m (32.8 ft) E3A2-10M4(T)(D)

—

50 m (164 ft) E3N2-50□4-US

3 m (9.8 ft) E3A2-R3M4(T)(D)

Polarized: 5 m (16.40 ft) E3B2-R5M4□-US
Long-distance: 7 m (22.97 ft)
E3B2-R7M4□-US

5 m (16.4 ft) E3N2-R5□4-US

70 cm (27.6 in) E3A2-DS70M4(T)(D)

2 m (6.56 ft) E3B2-D2M4□-US

2 m (6.56 ft) E3N2-D2□4-US

24 to 240 VAC, 50/60 Hz
12 to 240 VDC

24 to 240 VAC, 50/60 Hz
12 to 240 VDC

100 to 120 VAC, 50/60 Hz
10 to 30 VDC

Relay, 3 A, 250 VAC/30 VDC (supplied)
SCR, 200 mA, 250 VAC (G3K-2R2P-1 optional)

Contact: SPDT, 3 A, 250 VAC

SCR-SPST, 300 mA max.
(E3N2-□□Y4□B-US)

Complementary NPN, 200 mA, 30 VDC
(G3KD-YR2P-1 optional)
Complementary PNP, 200 mA, 30 VDC
(G3KD-YR2P-2 optional)

—

NPN-SPST with pull-up resistor,
200 mA (E3N2-□□E4□-US)
PNP-SPST, 200 mA (E3N2-□□B4-US)

—

—

DC NPN open collector, 20 mA
DC PNP open collector, 20 mA

15 ms max. (relay)
30 ms max. (SCR)
1 ms max. (transistor)

30 ms max. without timers
0.5 to 20 sec. with timers
(E3B2-□□M4D-US)

5 ms max. (transistor)
30 ms max. (SCR)

Plastic

Plastic

Plastic

IP66

IP66

IP67

PHOTOELECTRIC SENSORS



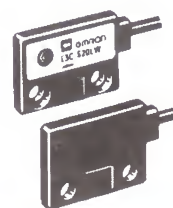
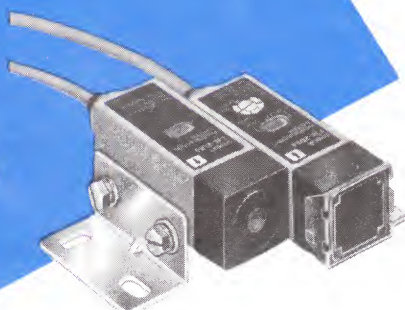
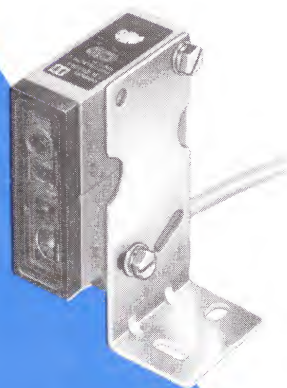
MODEL		E3B	E3K
Dimensions		130 H x 36 W x 82 D mm (5.12 x 1.42 x 3.23 in)	186 H x 89 W x 63 D mm (7.32 x 3.50 x 2.48 in)
Features		<ul style="list-style-type: none"> ■ Switches 5 amp loads ■ Rugged diecast metal housing ■ Switch-selectable Light-ON/Dark-ON operation ■ Plug-in timer modules include ON-delay, OFF-delay and one-shot types; choose 0.1 to 1 sec, 1 to 10 sec or 3 to 30 sec. timing ranges 	<ul style="list-style-type: none"> ■ Long sensing distances with enhanced mutual interference protection ■ Plug-in interchangeable outputs and timer modules ■ Includes DPDT relay output with 10 amp switching capacity ■ Clean, easy-to-wire interior ■ Switch selectable Light-ON/Dark-ON operation
Detection method and sensing distances	Through beam type	10 m (32.8 ft) E3B-10K-US-AC120	—
	Retroreflective	5 m (16.40 ft) E3B-R5K-US-AC120	10 m (32.8 ft) E3K-R10K4
	Diffuse reflective	2 m (6.56 ft) E3B-D2K-US-AC120	2 m (6.56 ft) E3K-D2K4
Supply voltage		120 VAC, 50/60 Hz	42 to 240 VAC, 50/60 Hz 24 to 240 VDC
Control outputs	AC	SPDT relay, 5 A, 120/240 VAC 180 VA pilot duty	DPDT relay, 10 A, 240 VAC (supplied) SCR, 1 A, 75 to 250 VAC (E39-W4 optional) SCR, 200 mA, 75 to 250 VAC (E39-W4S optional)
	DC	—	Transistor, 1 A, 3 to 50 VDC (E39-N4 optional) Transistor, 200 mA, 3 to 30 VDC (E39-N4S optional)
	Alarm	—	—
Response time		30 ms max.	30 ms max. (AC) 3 ms max. (DC, E39-N4S output) 5 ms max. (DC, E39-N4 output)
Materials		Diecast metal body, glass lens	Plastic
Enclosure rating		IP66	IP67

PHOTOELECTRIC SENSORS

SPECIAL-PURPOSE SENSORS

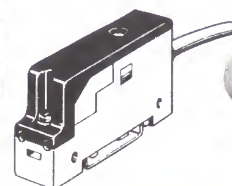
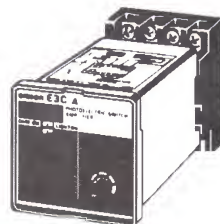
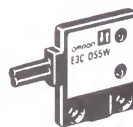
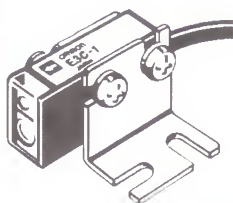
For tough application problems, Omron offers the widest range of specially-designed sensors. Here's what you'll find:

- Miniature sensors
- Mark detection sensors
- Specular reflection, area focusable, and pinpoint focusable sensors to eliminate background objects
- Color mark sensors
- Grooved head and slotted sensors
- Transparent object sensors

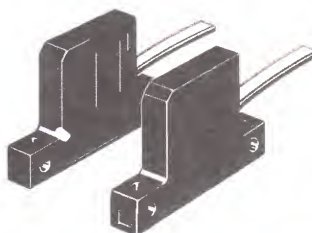
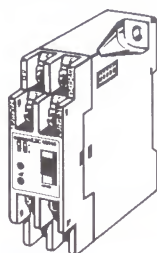
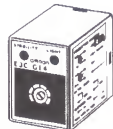


MODEL		E3C (through beam)
Dimensions		E3C-S20W 12.5 H x 2.8 W x 18 D mm (0.49 x 0.11 x 0.71 in)
Application		Space-confined installation
Amplifier type		Separate amplifier
Features		<ul style="list-style-type: none"> ■ Miniature sensing heads fit in space-confined areas ■ Separate amplifiers allow remote sensitivity adjustment when the sensing head is not accessible ■ Many amplifiers available, including AC and DC, with or without timing functions, prewired or socket-mount types ■ Ideal for long-term maintenance with sensing heads and amplifiers that are interchangeable ■ All offer selectable Light-ON/Dark-ON operation ■ All sensors have Power On indicators ■ Prewired amplifiers provide fine sensitivity adjustment and an alarm output for deteriorating sensing conditions
Detection method and sensing distances	Through beam type	10 cm (3.94 in) E3C-S10 20 cm (7.87 in) E3C-S20W 50 cm (19.69 in) E3C-S50 1 m (3.28 ft) E3C-1 2 m (6.56 ft) E3C-2
	Diffuse reflective	5 cm (1.97 in) E3C-DS5W 10 cm (3.94 in) E3C-DS10
Supply voltage		See E3C Amplifiers
Control outputs	AC	See E3C Amplifiers
	DC	See E3C Amplifiers
	Alarm	See E3C Amplifiers
Response time		See E3C Amplifiers
Materials		Diecast metal (E3C-2) or plastic (all others)
Enclosure rating		IP50 (E3C-□□□W), IP66 (E3C-1, -2), IP64 all others

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MODEL		E3C (through beam/diffuse reflective)		E3C Amplifiers	
Dimensions		E3C-1 15 H x 10 W x 28 D mm (0.59 x 0.39 x 1.10 in)	E3C-DS5W 19.5 H x 2.8 W x 18 D mm (0.77 x 0.11 x 0.71 in)	E3C-A, E3C-C 48 H x 48 W x 113.5 D mm (1.89 x 1.89 x 4.47 in)	E3C-J□4P 30 H x 14 W x 60 D mm (1.18 x 0.55 x 2.36 in)
Application		Space-confined installation		Space-confined installation	
Amplifier type		Separate amplifier		—	
Features		<ul style="list-style-type: none"> ■ Miniature sensing heads fit in space-confined areas ■ Separate amplifiers allow remote sensitivity adjustment when the sensing head is not accessible ■ Many amplifiers available, including AC and DC, with or without timing functions, prewired or socket-mount types ■ Ideal for long-term maintenance with sensing heads and amplifiers that are interchangeable ■ All offer selectable Light-ON/Dark-ON operation ■ All sensors have Power On indicators ■ Prewired amplifiers provide fine sensitivity adjustment and an alarm output for deteriorating sensing conditions 		<ul style="list-style-type: none"> ■ Slim prewired DC amplifier (E3C-J□4P) saves mounting space and provides fine sensitivity adjustment, alarm output for unstable switching conditions such as sensor misalignment or dust contamination, and a 40 ms OFF-delay for programmable controller input ■ 1/16 DIN size socket mount amplifiers (E3C-A, E3C-C) provide both AC and DC outputs ■ E3C-C offers built-in timing functions including ON-delay, OFF-delay and one-shot with 0.1 to 10 second timing range ■ Track-mount amplifier E3C-WH4F is designed for direct connection to S3D8 sensor controller ■ All offer selectable Light-ON/Dark-ON operation 	
Detection method and sensing distances	Through beam type	10 cm (3.94 in) E3C-S10 20 cm (7.87 in) E3C-S20W 50 cm (19.69 in) E3C-S50 1 m (3.28 ft) E3C-1 2 m (6.56 ft) E3C-2		Use any E3C sensing head with these amplifiers	
	Diffuse reflective	5 cm (1.97 in) E3C-DS5W 10 cm (3.94 in) E3C-DS10		Use any E3C sensing head with these amplifiers	
Supply voltage		See E3C Amplifiers		100 to 240 VAC, 50/60 Hz (E3C-A, -C) 12 to 24 VDC (E3C-GE4, -J□4P, -WH4F)	
Control outputs	AC	See E3C Amplifiers		SPDT relay, 1 A 240 VAC (E3C-A, -C)	
	DC	See E3C Amplifiers		Transistor, 80 mA, 1.5 to 4 mA constant current source, 24 VDC, (E3C-A, -C, -GE4) Complementary NPN and PNP, 100 mA, 40 VDC (E3C-WH4F) NPN, 100 mA max., 24 VDC (E3C-JC4P) PNP, 100 mA max., 24 VDC (E3C-JB4P)	
	Alarm	See E3C Amplifiers		50 mA, 24 VDC (E3C-J□4P)	
Response time		See E3C Amplifiers		1 ms (E3C-J□4P) 1 or 2 ms, selectable (E3C-GE4, -WH4F, -A, -C) 20 ms relay (E3C-A, E3C-C)	
Materials		Diecast metal (E3C-2) or plastic (all others)		Plastic	
Enclosure rating		IP50 (E3C-□□□W), IP66 (E3C-1, -2), IP64 all others		IP50 (E3C-J□4P), IP20 all others	



E3C Amplifiers

E3C-GE4
27.2 H x 20.7 W
x 35.5 D mm
(1.07 x 0.82 x 1.40 in)

E3C-WH4F
75 H x 22.5 W
x 80 D mm
(2.95 x 0.89 x 3.15 in)

E3HF

28 H x 50 W x 7 D mm
(1.10 x 1.97 x 0.28 in)

E3C-L (convergent beam)

38 H x 10 W x 18 D mm
(1.50 x 0.39 x 0.71 in)

Space-confined installation

Background elimination

Built-in amplifier

Separate amplifier

- Thin, small sensor mounts to conveyor walls and other space-confined areas
- Prewired with built-in amplifier
- Operation indicators on all models
- Focusing slits for separate type allow detection of objects as small as 0.5 mm (0.02 in)
- Light-ON and Dark-ON models

- Convergent beam lens arrangement eliminates background object in space-confined inspection and assembly applications
- Separate amplifiers allow remote sensitivity adjustment when the sensing head is not accessible
- Many amplifiers available, including AC and DC, with or without timing functions, prewired or socket-mount types
- Prewired amplifiers provide fine sensitivity adjustment and an alarm output for deteriorating sensing conditions

1 m (3.28 ft) E3HF-1E□

—

5 cm (1.97 in) E3HF-DS5E□

3 cm ±0.3 (1.18 in) E3C-LS3R

12 to 24 VDC

See E3C Amplifiers

—

See E3C Amplifiers

NPN, 80 mA with 1.5 to 3 mA constant current source

See E3C Amplifiers

—

See E3C Amplifiers

5 ms (separate type)
3 ms (diffuse type)

See E3C Amplifiers

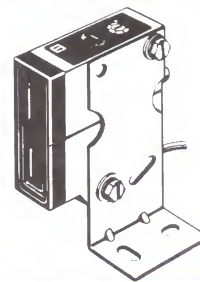
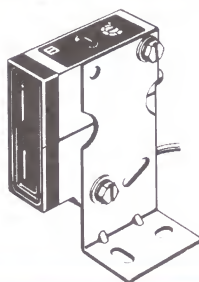
Plastic body

Plastic

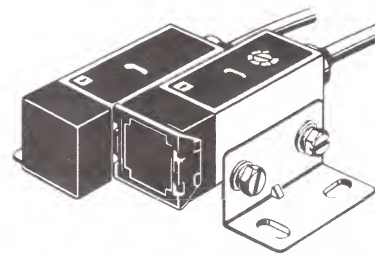
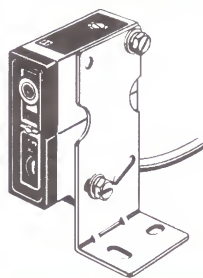
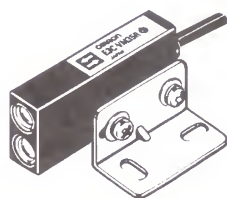
IP64

IP64

PHOTOELECTRIC SENSORS



MODEL		E3S-LS20X□4 (diffuse reflective)	E3S-LS10X□4 (specular reflective)
Dimensions		55 H x 17 W x 56 D mm (2.17 x 0.67 x 2.20 in)	55 H x 17 W x 56 D mm (2.17 x 0.67 x 2.20 in)
Application		Background elimination, adjustable range	Focal point sensing, adjustable
Amplifier type		Built-in amplifier	Built-in amplifier
Features		<ul style="list-style-type: none"> Manually adjustable sensing range provides background elimination over a wide area Less influenced by object color or surface conditions Sensitivity adjuster and operating stability indicator allow fine tuning to match installation Wire selectable Light-ON/Dark-ON operation Fast response time Built-in amplifier, prewired for easy installation 	<ul style="list-style-type: none"> Detect small objects down to 0.6 mm, screw threads, holes, level, height and marks Inspect for slight surface irregularities Manually adjustable optics set the spot distance Sensitivity adjuster and operating stability indicator allow fine tuning to match installation Wire selectable Light-ON/Dark-ON operation Fast response time Built-in amplifier, prewired for easy installation
Detection method and sensing distances	Through beam type	—	—
	Diffuse reflective	5 to 25 cm (1.97 to 9.84 in) adjustable	3 to 10 cm (1.18 to 3.94 in) adjustable
Supply voltage		12 to 24 VDC	12 to 24 VDC
Control outputs	AC	—	—
	DC	NPN, 80 mA, 1.5 to 3 mA constant current source, 24 VDC (E3S-LS20XE4) PNP, 100 mA, 24 VDC (E3S-LS20XB4)	NPN, 80 mA, 1.5 to 3 mA constant current source, 24 VDC (E3S-LS20XE4) PNP, 100 mA, 24 VDC (E3S-LS20XB4)
	Alarm	—	—
Response time		1 ms max.	1 ms max.
Materials		Diecast metal body, plastic lens	Diecast metal body, plastic lens
Enclosure rating		IP67	IP67



E3C-V (convergent beam)

20 H x 10 W x 47 D mm
(0.79 x 0.39 x 1.85 in)

Spot sensing

Separate amplifier

- Detect extremely small objects including 200 micron copper wire and IC chip parts, through narrow gaps in equipment
- Inspect for color, texture or part orientation
- Separate amplifiers allow remote sensitivity adjustment when the sensing head is not accessible
- Many amplifiers available including AC and DC, with or without timing functions, prewired or socket-mount types
- Prewired amplifiers provide fine sensitivity adjustment and an alarm output for deteriorating sensing conditions

E3L-DS50E4-50 (convergent beam)

55 H x 17 W x 50 D mm
(2.17 x 0.67 x 1.97 in)

Spot sensing

Built-in amplifier

- Laser beam provides long distance spot sensing and accurate positioning output
- Accurately detects tiny 2 mm objects over long distances (to 50 cm)
- FDA/IEC Class 1 laser requires no additional protective equipment
- Sensitivity adjuster and operating stability indicator allow fine tuning to match installation
- Alarm output signals deteriorating detection conditions
- Automatic power control circuit maintains stable light emission levels

E3L-2E4-50 (convergent beam)

20.4 H x 23 W x 55 D mm
(0.80 x 0.91 x 2.17 in)

Minute objects at long distance

Built-in amplifier

- Detect very small objects up to 2 m (6.56 ft) away with highly accurate positioning
- An adjustable aperture allows detection of objects from 0.1 to 0.5 mm diameter
- FDA/IEC Class 1 laser requires no additional protective equipment
- Sensitivity adjuster and operating stability indicator allow fine tuning to match installation
- Alarm output signals deteriorating detection conditions
- Automatic power control circuit maintains stable light emission levels

—

2 to 8 cm (0.79 to 3.15 in) with 1 mm dia. spot (E3C-VM35R)
4 to 11 cm (1.57 to 4.33 in) with 2 mm dia. spot (E3C-VS7R)

—

20 to 50 cm (7.9 to 19.7 in) with 2 x 2 mm object

2 m (6.56 ft) with 0.85 mm aperture using 0.5 mm dia. object
20 cm (7.9 in) with 0.1 mm aperture using 0.1 mm dia. object

See E3C Amplifiers

12 to 24 VDC

12 to 24 VDC

See E3C Amplifiers

—

—

See E3C Amplifiers

NPN, 80 mA, 1.5 to 3 mA constant current source, 24 VDC

NPN, 80 mA, 1.5 to 3 mA constant current source, 24 VDC

See E3C Amplifiers

NPN, 50 mA, 24 VDC

NPN, 50 mA, 24 VDC

See E3C Amplifiers

3 ms max.

1 ms max.

Plastic body, glass lens

Diecast metal body, plastic lens

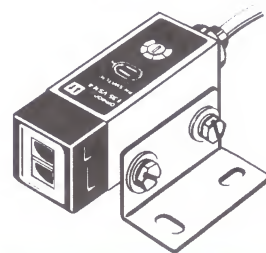
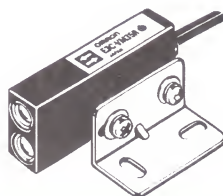
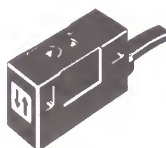
Diecast metal body, plastic lens

IP50

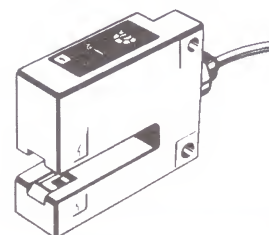
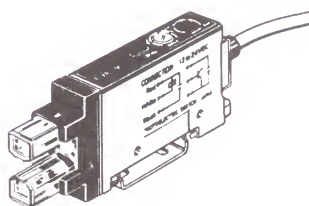
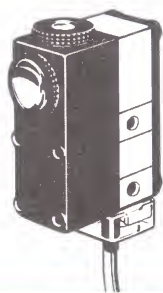
IP67

IP67

PHOTOELECTRIC SENSORS



MODEL	E3C-V (mark)		E3S-VS (mark)
Dimensions	28 H x 10 W x 15 D mm (1.10 x 0.39 x 0.59 in) 20 H x 10 W x 47 D mm (0.79 x 0.39 x 1.85 in)		23 H x 20.4 W x 66.6 D mm (0.91 x 0.80 x 2.62 in)
Application	Mark sensing		Mark sensing
Amplifier type	Separate amplifier		Built-in amplifier
Features	<ul style="list-style-type: none"> ■ Detect small marks on a variety of background colors ■ Ideal for packaging, sorting and labeling equipment ■ Small sensing heads fit space-confined installations ■ Separate amplifiers allow remote sensitivity adjustment when the sensing head is not accessible ■ Many amplifiers available, including AC and DC, with or without timing functions, prewired or socket-mount types ■ Prewired amplifiers provide fine sensitivity adjustment and an alarm output for deteriorating sensing conditions ■ Selectable Light-ON/Dark-ON operation 		<ul style="list-style-type: none"> ■ Accurately detects register marks against different colored backgrounds ■ Choose red or green light source to detect most mark and background color combinations ■ Vertical and horizontal mounting styles ■ Wire selectable Light-ON/Dark-ON operation ■ Sensitivity adjuster and stability indicator allow fine tuning of sensor to application
Detection method and sensing distances	Diffuse reflective: 1 cm (0.39 in), green LED (E3C-VS1G) with 1 mm mark 3 cm (1.18 in), red LED (E3C-VS3R) with 2 mm mark 3.5 cm (1.38 in), red LED (E3C-VM35R) with 2 mm mark 7 cm (2.76 in), red LED (E3C-VS7R) with 2 mm mark		Diffuse reflective: 1.2 cm (0.47 in) with 2 mm mark, Green LED (E3S-VS1□4□) 3.5 cm (1.40 in) with 3 mm mark, Red LED (E3S-VS3□42G) 5 cm (1.97 in) with 3 mm mark, Red LED (E3S-VS5□42R)
Supply voltage	See E3C Amplifiers		12 to 24 VDC
Control outputs	AC	See E3C Amplifiers	—
	DC	See E3C Amplifiers	NPN, 80 mA, 1.5 to 4 mA constant current source, 24 VDC (E3S-VS□E□□) PNP, 100 mA, 24 VDC (E3S-VS□B□□)
	Alarm	See E3C Amplifiers	—
Response time	See E3C Amplifiers		1 ms max.
Materials	Plastic		Diecast metal body, plastic lens
Enclosure rating	IP64 (E3C-VS1G, -VS3R) IP50 (E3C-VM35R, -VS7R)		IP67



E3ML (color mark)

94 H x 30.6 W x 62.4 D mm
(3.70 x 1.21 x 2.46 in)

Color registration mark detection

Built-in amplifier, optional controller

- Ultra-fast 20 microsecond response time
- Ideal for color registration mark detection in printing, labeling and packaging equipment
- 99-step sensitivity adjustment and incandescent light source assure accurate detection of fine color differences
- Fiber-optic versions available for sensing in confined spaces
- Optional controller provides power source for lamp and switch circuit as well as timing and logic functions
- Switch selectable timing functions include ON-delay, OFF-delay, one-shot and latch

Diffuse reflective:
8 mm (0.32 in) E3ML-M8□4-G
20 mm (0.79 in) E3ML-S2□4-G
Fiber-optic amplifier E3ML-X□4-G
with cables below:
Separate type:
10 mm (0.39 in) E32-TB50
Diffuse reflective:
0.5 mm (0.02 in) E23-DB8
1.2 mm (0.05 in) E32-DB50

Sensor: 10 to 30 VDC Lamp: 4.5 VAC
Controller: 120 VAC 50/60 Hz

Controller: SPDT, 3 A 240 VAC
(S3M-L10-US-AC120)

Sensor: NPN, 80 mA, 30 VDC
(E3ML-□□E4-G)
PNP, 80 mA, 30 VDC (E3ML-□□F4-G)
Controller: NPN, 80 mA, 30 VDC
(S3M-L10-US-AC120)

20μs max. (solid-state output)
15 ms max. (contact output)

Sensor: Diecast metal body, glass lens
Controller: Plastic body

IP67 (sensor)
IP22 (controller)

E3XR-GM5 (grooved head)

28.4 H x 12 W x 75.2 D mm
(1.12 x 0.47 x 2.96 in)

Mark sensing

Built-in amplifier

- Fast response time, ideal for high-speed packaging applications
- Choose red or green light source to detect most mark and background color combinations
- Slim, track-mount sensor saves space
- Easy to install, emitter and receiver are already correctly aligned
- Light-ON/Dark-ON operation, switch selectable
- Sensitivity adjuster and stability indicator allow fine tuning of sensor to application

Through beam type mounted in a grooved head:
5 mm (0.20 in) groove width, Green LED

12 to 24 VDC

NPN, 80 mA, 1.5 to 4 mA constant current source, 24 VDC (E3XR-GM5□E4)
PNP, 100 mA, 24 VDC (E3XR-GM5□B4)

0.5 ms max. (red LED) E3XR-GM5R□□
1 ms max. (green LED) E3XR-GM5G□□

Plastic

IP65

E3S-GS1 (grooved head)

52 H x 20 W x 73 D mm
(20.5 x 0.79 x 2.87 in)

Mark sensing

Built-in amplifier

- Fast response time, ideal for packaging applications
- 1 cm groove type detects marks on transparent film
- Pre-aligned emitter and receiver simplifies installation
- Wire selectable Light-ON/Dark-ON operation
- Sensitivity adjuster and stability indicator allow fine tuning of sensor to application

Through beam type mounted in a grooved head:
1 cm (0.39 in) E3S-GS1□4, Green LED

12 to 24 VDC

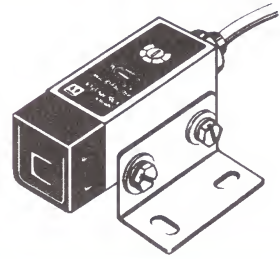
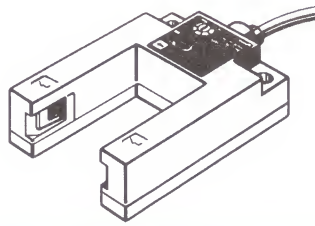
NPN, 80 mA, 1.5 to 4 mA constant current source, 24 VDC (E3S-GS□E4)
PNP, 100 mA, 24 VDC (E3S-GS□B4)

1 ms max.

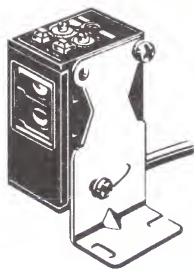
Plastic body, lens (E3S-GS1)

IP65 (E3S-GS1)

PHOTOELECTRIC SENSORS



MODEL	E3S-GS3 (grooved head)		E3S-R (retroreflective)	
Dimensions	20 H x 52 W x 93.6 D mm (0.79 x 2.05 x 3.29 in)		23 H x 20.4 W x 66.6 D mm (0.91 x 0.80 x 2.62 in)	
Application	Edge sensing		Clear bottle detection	
Amplifier type	Built-in amplifier		Built-in amplifier	
Features	<ul style="list-style-type: none">■ Fast response time, ideal for packaging applications■ 3 cm groove type detects edges and labels■ Pre-aligned emitter and receiver simplifies installation■ Wire selectable Light-ON/Dark-ON operation■ Sensitivity adjuster and stability indicator allow fine tuning of sensor to application		<ul style="list-style-type: none">■ Detects clear glass and plastic bottles without false signals■ Fast response time ideal for high-speed packaging equipment■ Wire selectable Light-ON/Dark-ON operation■ Sensitivity adjuster and stability indicator allow fine-tuning of sensor to application■ Choose vertical or horizontal mounting styles	
Detection method and sensing distances	Through beam type mounted in a grooved head: 3 cm (1.18 in) E3S-GS3□4		Retroreflective: 30 cm (11.81 in) E3S-RS30□4-30 1 m (3.28 ft) E3S-R1□4□	



E3SA (analog)

40 H x 20.4 W x 30 D mm
(1.57 x 0.80 x 1.18 in)

Analog output for measurement,
inspection

Built-in amplifier

- Ideal for analog detection of position, size and surface characteristics and color changes
- Fast 1 ms response time
- Small prewired DC sensor has built-in amplifier that provides both analog and ON/OFF outputs simultaneously
- 4-turn controls allow fine adjustments in sensitivity and output operating point

Through beam type:
30 cm (11.81 in) with slit or 2 m (6.56 ft)
E3SA-2C43A

Polarized retroreflective:
20 to 50 cm (7.87 to 19.69 in)
E3SA-RS50C43A

Diffuse reflective:
5 to 50 cm (1.97 to 19.69 in)
E3SA-DS5RC43A

Color sensing:
2 to 5 cm (0.79 to 1.97 in) with Red LED
E3SA-VS5RC43A

12 to 24 VDC

—

Analog, 4 to 20 mA
NPN open collector, 100 mA, 30 VDC

—

1 ms max.

Plastic

IP66

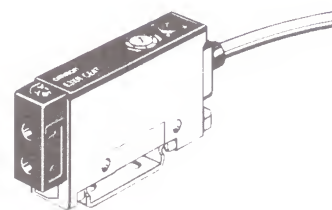
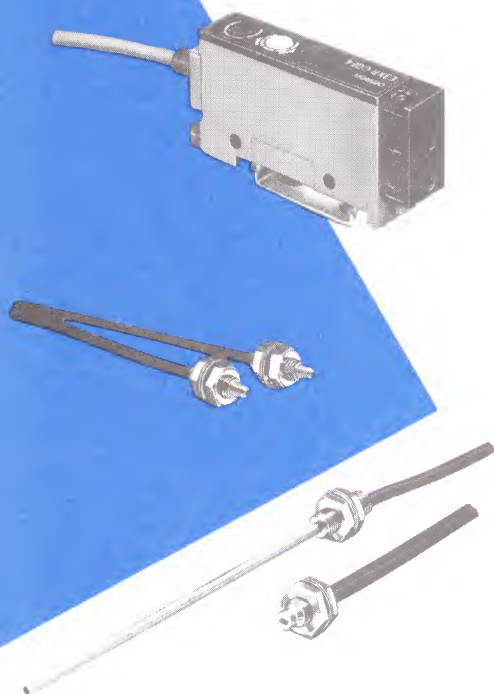
PHOTOELECTRIC SENSORS

FIBER-OPTIC SENSORS

No space is too small for an Omron fiber-optic photoelectric sensor. When electrical noise and high temperatures prove too hostile for electronics, fiber-optic sensors provide the solution.

They are ideal for small object detection, inspection and assembly, and on robotic arms and other flexing machinery.

Omron offers amplifiers for bracket, socket or track mounting. A wide selection of plastic and glass fiber-optic cables is on page 26.



MODEL

E3XR (fiber-optic amplifier)

Dimensions

28.4 H x 12 W x 60 D mm
(1.12 x 0.47 x 2.36 in)

Application

All E32-Series cables

Amplifier type

Built-in DC amplifier

Features

- Slim amplifier saves space, mounts on DIN rail track
- Fast response time, ideal for high-speed inspection
- Choose red or green light source for mark detection applications
- Switch selectable Light-ON/Dark-ON operation
- 40 ms OFF-delay for programmable controller input and alarm output indicating unstable sensing conditions available
- Enhanced mutual interference protection allows side-by-side mounting of fiber-optic sensing heads
- Sensitivity adjuster and stability indication allow fine-tuning of sensor to the application

Light source

Red LED (E3XR-C□4□)
Green LED (E3XR-CG□4□)

Supply voltage

12 to 24 VDC

Control outputs

AC

—

DC

NPN, 80 mA, 1.5 to 4 mA constant current source, 30 VDC max. (E3XR-C□E4□)
PNP, 100 mA max. open collector (E3XR-CB4□)

Alarm

NPN, 50 mA (E3XR-C□E4T)
PNP, 50 mA (E3XR-CB4T)

Response time

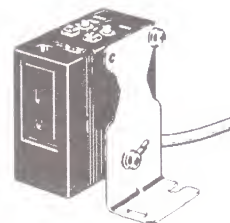
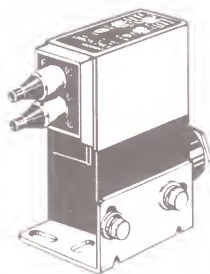
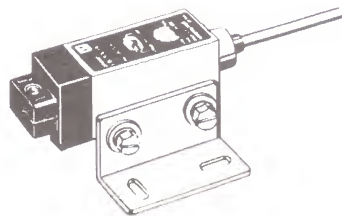
0.5 ms max.

Materials

Plastic

Enclosure rating

IP65



E3S-X3 (fiber-optic amplifier)

23 H x 20 W x 70.5 D mm
(0.91 x 0.79 x 2.78 in)

All E32-Series cables

Built-in DC amplifier

- Compact amplifier has a rugged metal housing
- Fast response time
- Wire selectable Light-ON/Dark-ON operation
- Enhanced mutual interference protection allows side-by-side mounting of sensing heads
- Sensitivity adjuster and stability indication allow fine-tuning of sensor to the application

Red LED

12 to 24 VDC

—

NPN, 80 mA, 1.5 to 4 mA constant current source, 30 VDC max. (E3S-X3CE4)
PNP, 100 mA max. open collector (E3S-X3-BE4)

—

1 ms max.

Diecast metal

IP66

E3A2-X (fiber-optic amplifier)

75 H x 26 W x 75.3 D mm
(2.95 x 1.02 x 2.95 in)

Most E32-Series cables

Built-in AC/DC amplifier

- Universal supply voltage for AC/DC operation
- Plug-in, interchangeable outputs for easy maintenance
- Built-in timers available include ON-delay, OFF-delay, and one-shot (E3A2-XCM4T) or independently adjustable ON-delay and OFF-delay (E3A2-XCM4D)
- Switch selectable Light-ON/Dark-ON operation
- Sensitivity adjuster and stability indication allow fine-tuning of sensor to the application
- Ready to use: includes 3 A relay and mounting bracket
- 1/2-14 NPT conduit opening

Red LED

24 to 240 VAC, 50/60 Hz
12 to 240 VDC

SPDT relay, 3 A, 250 VAC (E3A2-XCM4□□)
SCR, 200 mA, 250 VAC (G3K-2R2P-1 optional)

NPN, 200 mA, 30 VDC (G3KD-YR2P-1 optional)
PNP, 200 mA, 30 VDC (G3KD-YR2P-2 optional)

—

30 ms max. (AC)
1 ms max. (DC)

Plastic

IP66

E3XA (analog fiber-optic amplifier)

40 H x 20.4 W x 42.2 D mm
(1.75 x 0.80 x 1.66 in)

All E32-Series cables

Built-in DC amplifier, analog output

- Ideal for sensing and inspection in space-confined areas, provides analog output proportional to light received
- Special fiber-optic cables include E32-T16 wide beam, E32-M21 with four pairs of sensing heads, and retroreflective models E32-R16 and E32-R21
- Use to detect positioning, size, color and surface characteristics
- Prewired amplifier provides both analog output and ON/OFF output
- Four-turn controls allow fine adjustment of sensitivity and operating point

Red LED

12 to 24 VDC

—

4 to 20 mA analog
NPN open collector,
100 mA 30 VDC

—

1 ms max.

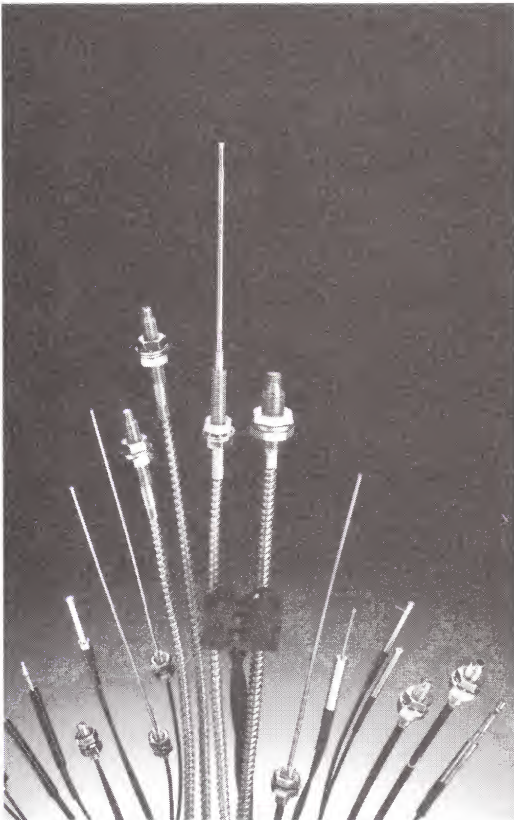
Plastic

IP66

PHOTOELECTRIC SENSORS

FIBER-OPTIC CABLES

An incredible variety of E32-series fiber-optic cables are available for Omron amplifiers. A wide range of problem-solving accessories enhance the performance of fiber-optic cables. Here are some helpful considerations.



Method of detection

Separate type fiber-optic cables detect opaque objects that break the beam; they require mounting space for separate emitter and receiver sensing heads. Diffuse reflective fiber-optic cables reflect the light off the object to be detected. Reflective sensors deliver and receive the light in a single sensing head, however, detecting distance is reduced.

Space-confined installations

Fiber-optic sensors fit where nothing else will, but "hard-to-reach" takes many different forms. Most plastic fiber-optic cables can be cut to custom length in the field from the original 2-meter (6.56 ft) length. When threaded heads are too big to reach the detection site, consider a cable with bendable steel tubing. They can retain complex shapes and are ideal for multiple sensor inspections of minute assemblies and parts.

Long distances

If you need to extend the sensing distance of separate type cables, use the optional lens kit to increase by seven times the distance between emitter and receiver.

Small objects

Thinner fiber-optic cables allow detection of small objects. Needle probes may also be chosen to detect objects as small as 0.0006 inch passing flush by the fiber-optic cable lens. Side view accessories and "periscope" type needle probes provide space-efficient ways to do right angle detection.

Shiny objects

Accurate positioning for highly polished, reflective surfaces is easily achieved by using a convergent beam sensing arrangement. Omron offers cables terminated in a block, with fixed emitter and receiver mounted at a right angle, for a narrow detection zone. A convergent beam mounting accessory, for cables terminated in threaded heads, allows the angle to be adjusted for proper detection.

Hot environments

Most Omron fiber-optic cables tolerate temperatures from -40° to 70°C (-40° to 158°F). To detect hot parts coming out of thermoforming equipment, ovens and other high-temperature environments, choose plastic sheathed cables for temperatures to 150°C (300°F) or armored glass cables for 400°C (750°F).

Coiled cables for flexing equipment

Fiber-optic cables with a retractable coiled section are ideally suited for robot arms and other flexing equipment. They are available in both separate and diffuse reflective types, with and without bend-to-shape steel tubing.

Which amplifier to use

The table at right shows that Omron's fiber-optic cables are almost universally compatible with the full range of amplifiers.

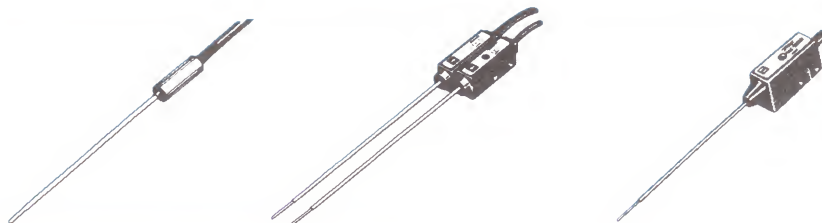
Fiber-Optic Cables		Amplifiers			
Part Number	Description	E3XR	E3S-X3	E3A2-X	E3XA
General purpose separate type					
E32-TC200, TC50	Standard	•	•	•	•
E32-TC200A	Small head	•	•	•	•
E32-TC200B	Bendable tip	•	•	•	•
E32-TC200C	Coiled cable	•	•	•	—
E32-TC200D	Coiled cable, bendable tip	•	•	•	—
E32-TC200E	Thin cable	•	•	—	•
E32-TC200F	Thin cable, bendable tip	•	•	—	•
General purpose diffuse reflective type					
E32-DC200, DC50	Standard	•	•	•	•
E32-CC200	Concentric beam	•	•	•	•
E32-DC200B	Bendable tip	•	•	•	•
E32-DC200C	Coiled cable	•	•	•	—
E32-DC200D	Coiled cable, bendable tip	•	•	•	—
E32-DC200E	Thin cable	•	•	—	•
E32-DC200F	Thin cable, bendable tip	•	•	—	•
Special purpose, separate type					
E32-G14	Grooved head	•	•	•	•
E32-T14	Side view magnifying tip	•	•	•	•
E32-T22	End of tip sensing	•	•	•	•
E32-T24	Right angle sensing	•	•	—	•
Special purpose, diffuse reflective type					
E32-DC9G	No cable, direct mount	•	•	—	•
E32-D24	Right angle sensing	•	•	—	•
E32-D32	Concentric beam, end of tip	•	•	—	•
E32-D33	End of tip, ultra small objects	•	•	—	•
High temperature, separate type					
E32-T51	Plastic, to 150°C (300°F)	•	•	•	•
E32-T61	Armored, to 300°C (572°F)	•	•	—	•
High temperature, diffuse reflective type					
E32-D51	Plastic, to 150°C (300°F)	•	•	•	•
E32-D61	Armored, to 300°C (572°F)	•	•	—	•
E32-D73	Armored, to 400°C (752°F)	•	•	—	•
Convergent beam					
E32-L25	Side cable	•	•	•	•
E32-L25A	Bottom cable	•	•	•	•
Retroreflective types					
E32-R21	Cylindrical, M6, Polarized	•	•	—	•
E32-R16	Block type	•	•	•	•
Measurement application					
E32-T16	Wide 10 mm light beam	•	•	•	•
E32-M21	Four sensing pairs	•	•	—	•

Legend:

• = OK

— = Not Applicable

PHOTOELECTRIC SENSORS



MODEL

E3C Fiber-Optic Probes

Dimensions	E3C-DS1A/E3C-DM5A 8 mm dia. x 27.5 mm L (0.32 x 1.08 in) 90 mm (3.54 in) probe	E3C-S5/E3C-DS1/E3C-DM5 11 H x 8 W x 36.4 D mm (0.43 x 0.32 x 1.43 in) 85.6 mm (3.37 in) probe	E3C-DM2R 13 H x 10 W x 40 D mm (0.51 x 0.35 x 1.57 in) 64.5 mm (2.54 in) probe
------------	--	--	---

Application	Space-confined installation with hard-to-reach sensing site
-------------	---

Amplifier type	Separate amplifier (all E3C types)
----------------	------------------------------------

Features	<ul style="list-style-type: none"> ■ Bendable stainless steel probes retain complex shapes for detection in hard-to-reach areas ■ Ideal for detection in small parts assembly and inspection ■ Choose cylindrical (E3C-□□A) or rectangular housings ■ Wide selection of amplifiers to choose from: AC or DC, with or without timing functions ■ Red light source contained in sensor housing ■ Sensing heads have shielded wiring for amplifier connections
----------	---

Detecting method and sensing distances	Separate type	5 cm (1.97 in) E3C-S5, E3C-S5A
	Diffuse reflective	1 cm (0.39 in) E3C-DS1, E3C-DS1A 5 mm (0.20 in) E3C-DM5, E3C-DM5A 2 mm (0.08 in) E3C-DM2R

Supply voltage	See E3C Amplifiers
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Control outputs	AC	See E3C Amplifiers
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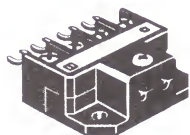
	DC	See E3C Amplifiers
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	Alarm	See E3C Amplifiers
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Response time	See E3C Amplifiers
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Materials	Plastic
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Enclosure rating	IP66 (E3C-□□□A) IP64 (all others)
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E3C-X2C (cable adapter)

12.5 H x 36 W x 33.7 D mm
(0.49 x 1.42 x 1.33 in)

E3C amplifier features for E32-Series
fiber-optic cables

Separate amplifier
(E3C-A, E3C-C, E3C-GE4)

- Adapts E3C amplifiers for use with selected E32-Series fiber-optic cables
- Mounts to amplifier socket's terminal strip
- Fast response time
- Amplifier E3C-C with built-in ON-delay, OFF-delay and one-shot timers offers widest timing range: 0.1 to 10 seconds duration

3 cm (1.18 in) with
E32-TC200 fiber-optic cable

1.5 cm (0.59 in) with
E32-DC200 fiber-optic cable

See E3C Amplifiers

See E3C Amplifiers

See E3C Amplifiers

See E3C Amplifiers

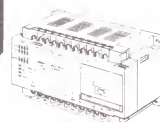
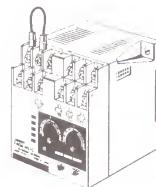
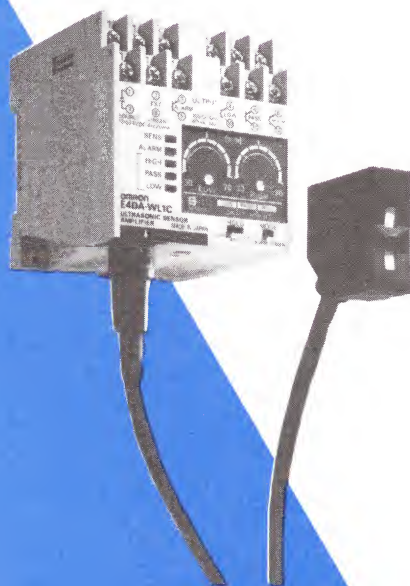
See E3C Amplifiers

Plastic

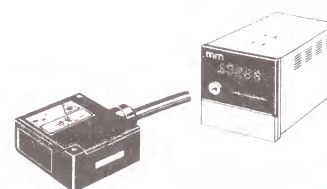
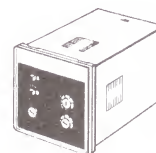
IP00

MEASURING SENSOR SYSTEMS

For precise in-line inspection that keeps pace with today's automated manufacturing operations, Omron offers several cost-effective solutions. Measuring sensor systems combine advanced controllers with finely tuned sensing. Use these systems for gauging, parts orientation, inspection for correct assembly and sorting, and more.



MODEL	E4DA	E3W2
Method of detection	Ultrasonic displacement	Line array image sensor
Applications	Inspect objects regardless of color, measure height of different objects, web control and more.	Precision positioning, size measurement, counting
Detecting distance	30 to 70 mm	50 mm to 1 meter with field of vision width from 25 to 500 mm
Performance	Detects objects as small as 1 mm dia. at 50 mm with 0.2 mm resolution	Divides field of vision into 512 segments, detects opaque objects as small as 0.15 mm dia. at 50 mm
Output	Analog 4-20 mA output, scalable for three transistor outputs	Controller provides 3 external relay outputs, expandable to 7 outputs, with ON-delay, OFF-delay and one-shot timing. Program memory can be divided into four program banks, 100 steps each.
Response time	2 ms	23 ms to 45 ms



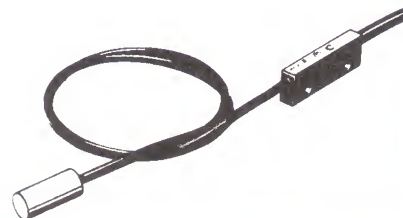
MODEL	E2CA	3Z4M
Method of detection	Inductive proximity sensor	Laser displacement sensor
Applications	Inspection and distance measurement of metal parts	Precise positioning and measurement of height of different objects.
Detecting distance	0.3 to 1.5 mm 0.4 to 2 mm 1 to 5 mm 2 to 10 mm	±10 mm at 40 mm center distance ±30 mm at 100 mm center distance
Performance	0.05% full scale resolution	10 µm resolution at 40 mm 50 µm resolution at 100 mm
Output	Linear 4 to 20 mA for distance from object to sensor 100 mA, 40 VDC switching output from amplifier	Analog 4 to 20 mA and -10 to +10 V selectable displacement output Open collector transistor alarm output, 100 mA, 30 VDC
Response time	1, 1.5 or 3 kHz	1 ms or 20 ms, switch selectable on controller

PROXIMITY SENSORS

CYLINDRICAL INDUCTIVE PROXIMITY SENSORS

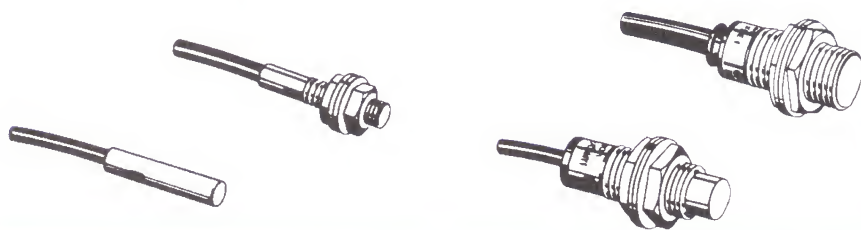
The most popular sizes are all here. They all have operation indicators... even our tiny 4 mm diameter model. Choose shielded and unshielded, AC and DC types, threaded and unthreaded bodies. Many offer short-circuit protection and DC types have reverse polarity protection. Some models offer weld-field and RFI immunity for installations with serious electrical noise problems. Prewired and connector-ready plug-in models are available.

Be sure to see our limit switch style and special-purpose sensors.



MODEL		E2EC
Dimensions		3 mm (0.12 in) dia. x 12 mm (0.47 in) head 8 mm (0.32 in) dia. x 18 mm (0.71 in) head 35 L x 5 W x 10 H mm amplifier (1.38 x 0.20 x 0.39 in)
Description		<ul style="list-style-type: none"> ■ Subminiature sensor is 40 cm (15.75 in) from amplifier to fit tight spaces ■ Slim, cable amplifier can be gang mounted ■ Wide operating voltage ■ Operation indicator on amplifier allows easy monitoring when sensor is buried in machinery ■ Fast response
Detecting distance/ Body type	Shielded	0.5 mm (0.02 in) E2EC-CR5□1 2.5 mm (0.10 in) E2EC-C2R5□1
	Unshielded	—
Supply voltage		4.75 to 30 VDC
Output	AC	—
	DC	NPN-NO, 100 mA, 30 VDC (E2EC-C□R5C1) PNP-NO, 100 mA, 30 VDC (E2EC-C□R5B1)
Response frequency		1 kHz
Materials		Metal sensor housing; plastic amplifier housing
Enclosure rating		IP64

PROXIMITY SENSORS



MODEL

E2E Miniature DC

E2E Standard AC

Dimensions

4 mm dia. x 25 L mm (0.16 x 0.98 in)
M5 x 25 L mm (0.22 x 0.98 in)
5.4 dia. x 25 L mm (0.21 x 0.98 in)

M8 x 40 L mm (0.34 x 1.57 in)
M12 x 40 L mm (0.49 x 1.57 in)
M18 x 47 L mm (0.73 x 1.85 in)
M30 x 57 L mm (1.20 x 2.24 in)

Description

- Miniature sensors with built-in DC amplifier are ideal for space-confined detection sites
- Shielded for flush mounting in metal
- Fast response
- Reverse polarity and surge protection provided
- Operation indicators, all models

- Two-wire AC sensors in standard sizes
- Short metal body
- Operation indicator, all models
- Short-circuit protection available in M18 and M30 sizes

Detecting distance/ Body type

Shielded

0.8 mm (0.03 in) E2E-CR8□□
1 mm (0.04 in) E2E-X1□□, E2E-C1□□

M8: 1.5 mm (0.06 in) E2E-X1R5Y□
M12: 2 mm (0.08 in) E2E-X2Y□
M18: 5 mm (0.20 in) E2E-X5Y□-US
M30: 10 mm (0.39 in) E2E-X10Y□-US

Unshielded

—

M8: 2 mm (0.08 in) E2E-X2MY□
M12: 5 mm (0.20 in) E2E-X5MY□
M18: 10 mm (0.39 in) E2E-X10MY□-US
M30: 18 mm (0.71 in) E2E-X18MY□-US

Supply voltage

10 to 30 VDC

20 to 264 VAC, 50/60 Hz
(E2E-X□□□Y□-US)
90 to 140 VAC, 50/60 Hz
(E2E-X□□□Y□-53-US)

Output

AC

—

SCR-NO (E2E-X□□□Y1-□□),
SCR-NC (E2E-X□□□Y2-□□)
5 to 100 mA, 5 to 300 mA, 5 to 500 mA

DC

NPN-NO open collector, 100 mA (E2E-□□□C1)
NPN-NC open collector, 100 mA (E2E-□□□C2)
PNP-NO open collector, 100 mA (E2E-□□□B1)
PNP-NC open collector, 100 mA (E2E-□□□B2)

—

Response frequency

3 kHz

25 Hz

Materials

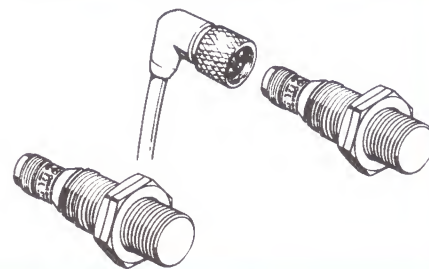
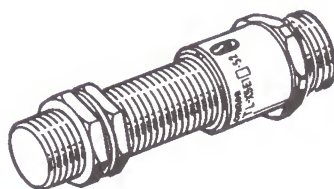
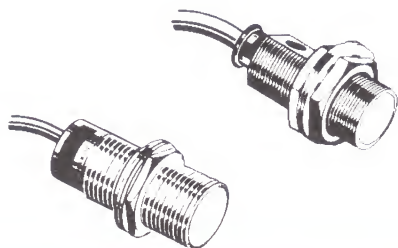
Metal sensor housing

Nickel-plated brass housing

Enclosure rating

IP67

IP 67



TL-X

M12 x 54 L mm (0.49 x 2.13 in)
M18 x 55 L mm (0.73 x 2.17 in)
M30 x 58.5 L mm (1.20 x 2.30 in)

TL-X-5

M18 x 80 L mm (0.73 x 3.15 in)
M30 x 80 L mm (1.20 x 3.15 in)

TL-X-E

Prewired	Connector-ready
M8 x 32 L mm (0.34 x 1.26 in)	M8 x 43 L mm (0.34 x 1.69 in)
M12 x 40 L mm (0.49 x 1.57 in)	M12 x 49 L mm (0.49 x 1.93 in)
M18 x 45 L mm (0.73 x 1.77 in)	M18 x 55 L mm (0.73 x 2.17 in)
M30 x 50.6 L mm (1.20 x 1.99 in)	M30 x 60 L mm (1.20 x 2.36 in)

- Two-wire AC sensors in short metal body
- Withstands temperatures to 85°C (185°F)
- Operation indicator, all models
- Wide supply voltage range: 45 to 260 VAC

- Plug-in AC and DC metal body sensors offer weld-field immunity
- Choose Mini-Change® or Micro-Change® style connector models
- Operation indicator, all models
- Welding spatter resistant models available with ceramic face
- RFI and short-circuit protected

- Short body three-wire DC sensors have high visibility indicator
- Full length threaded metal body
- Short-circuit protection and reverse polarity protection, all models
- Prewired and Micro-Change® style connector types

M12: 2 mm (0.08 in) TL-X2Y□
M18: 5 mm (0.20 in) TL-X5Y□
M30: 10 mm (0.39 in) TL-X10Y□

M18: 5 mm (0.20 in) TL-X5□□-5□
M30: 10 mm (0.39 in) TL-X10□□-5□

M8: 1.5 mm (0.06 in) TL-X1R□□-E
M12: 2 mm (0.08 in) TL-X2□□-E
M18: 5 mm (0.20 in) TL-X5□□-E
M30: 10 mm (0.39 in) TL-X10□□-E

M12: 5 mm (0.20 in) TL-X5MY□
M18: 10 mm (0.39 in) TL-X10MY□
M30: 18 mm (0.71 in) TL-X18MY□

—

M8: 2 mm (0.08 in) TL-X2M□□-E
M12: 5 mm (0.20 in) TL-X5M□□-E
M18: 10 mm (0.39 in) TL-X10M□□-E
M30: 18 mm (0.71 in) TL-X18M□□-E

45 to 260 VAC, 50/60 Hz

90 to 140 VAC, 50/60 Hz
10 to 30 VDC

10 to 40 VDC

SCR-NO (TL-X□□□Y1),
SCR-NC (TL-X□□□Y2)
5 to 200 mA

SCR-NO (TL-X□□□Y1-5□),
SCR-NC (TL-X□□□Y2-5□)
5 to 300 mA

—

NPN-NO, 200 mA (TL-X□□□E1-5□)
NPN-NC, 200 mA (TL-X□□□E2-5□)
PNP-NO, 200 mA (TL-X□□□F1-5□)
PNP-NC, 200 mA (TL-X□□□F2-5□)

NPN-NO, 200 mA (TL-X□□□C1-E)
NPN-NC, 200 mA (TL-X□□□C2-E)
PNP-NO, 200 mA (TL-X□□□B1-E)
PNP-NC, 200 mA (TL-X□□□B2-E)

40 Hz

AC: 25 Hz
DC: 350, 250 Hz

0.1 to 1 kHz

Nickel-plated brass housing

Nickel-plated brass housing

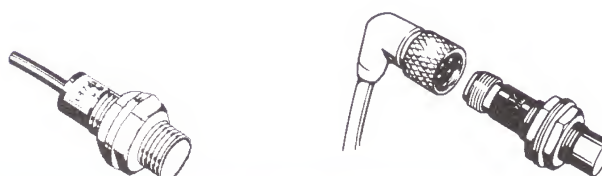
Nickel-plated brass housing

IP67

IP67

IP67

PROXIMITY SENSORS



MODEL

E2E Standard DC

Dimensions

Prewired

M8 x 30 L mm (0.34 x 1.18 in)
M12 x 35 L mm (0.49 x 1.38 in)
M18 x 47 L mm (0.73 x 1.85 in)
M30 x 57 L mm (1.20 x 2.24 in)

Connector-ready

M8 x 46 L mm (0.34 x 1.81 in)
M12 x 48 L mm (0.49 x 1.89 in)
M18 x 53 L mm (0.73 x 2.09 in)
M30 x 63 L mm (1.20 x 2.48 in)

Description

- Short body, space-saving three-wire DC sensors
- Operation indicator, all models
- Short-circuit protection and reverse polarity protection, all models
- Prewired and Micro-Change® style connector types

Detecting distance/ Body type

Shielded

M8: 1.5 mm (0.06 in) E2E-X1R□□
M12: 2 mm (0.08 in) E2E-X2□□
M18: 5 mm (0.20 in) E2E-X5□□
M30: 10 mm (0.39 in) E2E-X10□□

Unshielded

M8: 2 mm (0.08 in) E2E-X2M□□
M12: 5 mm (0.20 in) E2E-X5M□□
M18: 10 mm (0.39 in) E2E-X10M□□
M30: 18 mm (0.71 in) E2E-X18M□□

Supply voltage

10 to 30 VDC

Output

AC

—

DC

NPN-NO, 200 mA (E2E-X□□□C1)
NPN-NC, 200 mA (E2E-X□□□C2)
PNP-NO, 200 mA (E2E-X□□□B1)
PNP-NC, 200 mA (E2E-X□□□B2)

Response frequency

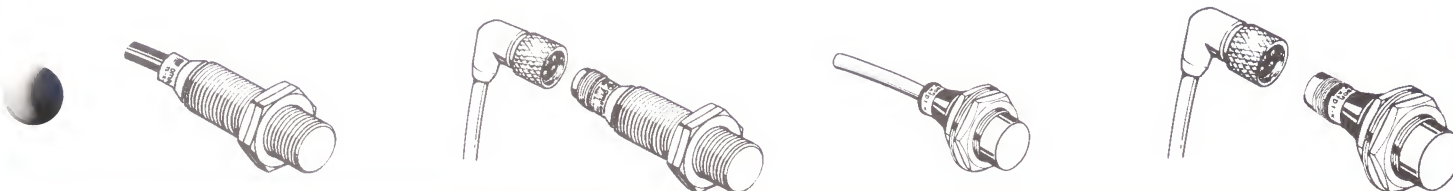
0.1 to 2 kHz

Materials

Nickel-plated brass housing

Enclosure rating

IP67



TL-X-L

Prewired

M12 x 58 L mm (0.49 x 2.28 in)
M18 x 68 L mm (0.73 x 2.68 in)
M30 x 73 L mm (1.20 x 2.87 in)

Connector-ready

M12 x 67 L mm (0.49 x 2.64 in)
M18 x 78 L mm (0.73 x 3.07 in)
M30 x 83 mm (1.20 x 3.27 in)

E2E-XD

Prewired

M8 x 30 L mm (0.34 x 1.18 in)
M12 x 35 L mm (0.49 x 1.38 in)
M18 x 47 L mm (0.73 x 1.85 in)
M30 x 56 L mm (1.20 x 2.21 in)

Connector-ready

M8 x 46 L mm (0.34 x 1.81 in)
M12 x 48 L mm (0.49 x 1.89 in)
M18 x 54.4 mm (0.73 x 2.14 in)
M30 x 63.4 mm (1.20 x 2.50 in)

- Long body three-wire DC sensors have high visibility indicator
- Full length threaded metal body
- Conforms to CENELEC 50008
- Short-circuit protection and reverse polarity protection, all models
- Prewired and Micro-Change® style connector types

- Two-wire DC sensors offer longer sensing distances
- Self-diagnostic function (E2E-X□□D1S) models have alarm output to indicate coil breakage or presence of an object at an unstable detection distance
- Operation indicator, all models
- Prewired and Micro-Change® style connector types

M12: 2 mm (0.08 in) TL-X2□□-□L
M18: 5 mm (0.20 in) TL-X5□□-□L
M30: 10 mm (0.39 in) TL-X10□□-□L

M8: 2 mm (0.08 in) E2E-X2D□□
M12: 3 mm (0.12 in) E2E-X3D□□
M18: 7 mm (0.28 in) E2E-X7D□□
M30: 10 mm (0.39 in) E2E-X10D□□

M12: 5 mm (0.20 in) TL-X5M□□-□L
M18: 10 mm (0.39 in) TL-X10M□□-□L
M30: 18 mm (0.71 in) TL-X18M□□-□L

M8: 4 mm (0.16 in) E2E-X4MD□□
M12: 8 mm (0.32 in) E2E-X8MD□□
M18: 14 mm (0.55 in) E2E-X14MD□□
M30: 20 mm (0.79 in) E2E-X20MD□□

10 to 40 VDC

10 to 30 VDC

NPN-NO, 200 mA (TL-X□□□C1-□L)
NPN-NC, 200 mA (TL-X□□□C2-□L)
PNP-NO, 200 mA (TL-X□□□B1-□L)
PNP-NC, 200 mA (TL-X□□□B2-□L)

3 to 100 mA
50 mA alarm output (E2E-X□□D1S only) with
300 ms output ON-delay

0.1 to 0.8 kHz

0.4 to 1.5 kHz

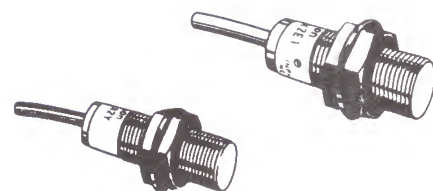
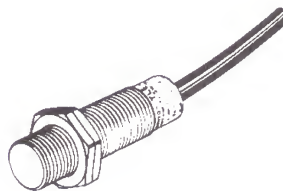
Nickel-plated brass housing

Nickel-plated brass housing

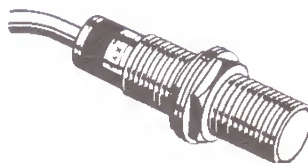
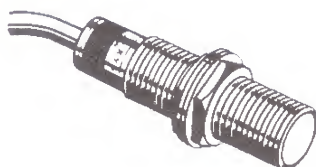
IP67

IP67

PROXIMITY SENSORS



MODEL	TLE		E2F	
Dimensions	M12 x 65 L mm (0.49 x 2.56 in) M18 x 66 L mm (0.73 x 2.56 in)		AC models M8 x 40 L mm (0.34 x 1.57 in) M12 x 40 L mm (0.49 x 1.57 in) M18 x 47 L mm (0.73 x 1.85 in) M30 x 57 L mm (1.20 x 2.24 in)	DC models M8 x 30 L mm (0.34 x 1.18 in) M12 x 35 L mm (0.49 x 1.38 in) M18 x 47 L mm (0.73 x 1.85 in) M30 x 57 L mm (1.20 x 2.24 in)
Description	<ul style="list-style-type: none"> ■ Economical three-wire DC sensors ■ Watertight construction ■ Operation indicator, all models ■ Reverse polarity protection, all models 		<ul style="list-style-type: none"> ■ Three-wire DC sensors in plastic body ■ Watertight construction withstands washdown ■ Operation indicator, all models ■ Choose AC models with or without short-circuit protection ■ DC models have short-circuit protection and reverse polarity protection 	
Detecting distance/ Body type	Shielded	M12: 2 mm (0.08 in) TLE-X2□□ M18: 5 mm (0.20 in) TLE-X5□□	M8: 1.5 mm (0.06 in) E2F-X1R□□ M12: 2 mm (0.08 in) E2F-X2□□ M18: 5 mm (0.20 in) E2F-X5□□ M30: 10 mm (0.39 in) E2F-X10□□	
	Unshielded	5 mm (0.20 in) TLE-X5M□□ 10 mm (0.39 in) TLE-X10M□□	—	
Supply voltage	10 to 30 VDC		20 to 264 VAC, 50/60 Hz 10 to 30 VDC	
Output	AC	—	SCR-NO (E2F-X□□□Y1) SCR-NC (E2F-X□□□Y2) 5 to 100 mA, 5 to 300 mA, 5 to 500 mA	
	DC	NPN-NO, 200 mA (TLE-X□□□C1) PNP-NO, 200 mA (TLE-X□□□B1)	NPN-NO, 200 mA (E2F-X□□□E1) NPN-NC, 200 mA (E2F-X□□□E2) PNP-NO, 200 mA (E2F-X□□□F1) PNP-NC, 200 mA (E2F-X□□□F2)	
Response frequency	0.2 to 0.8 kHz		25 Hz (AC) 0.4 to 2 kHz (DC)	
Materials	Nickel-plated brass housing		Plastic housing	
Enclosure rating	IP67		IP68	



E2EV

M12 x 60 mm L (0.49 x 2.36 in)
M18 x 60 mm L (0.73 x 2.36 in)
M30 x 60 mm L (1.20 x 2.36 in)

- Detect aluminum and copper as effectively as iron and stainless steel with one sensor
- Ideal for use on conveyors with workpieces of different metals
- Prewired DC sensors offer up to three times the detection distance for aluminum of other inductive sensors
- Output short-circuit, surge voltage and reverse polarity protection

M12: 2 mm (0.08 in) E2EV-X2
M18: 5 mm (0.20 in) E2EV-X5
M30: 10 mm (0.39 in) E2EV-X10

10 to 30 VDC

NPN-NO, 100 mA (E2EV-X□C1)
NPN-NC, 100 mA (E2EV-X□C2)
PNP-NO, 100 mA (E2EV-X□B1)
PNP-NC, 100 mA (E2EV-X□B2)

70 to 150 Hz

Nickel-plated brass housing

IP67

E2EZ

M18 x 80 mm L (0.73 x 3.15 in)
M30 x 80 mm L (1.20 x 3.15 in)

- Accurately detects workpieces through aluminum or steel chips
- DC sensor is ideal for machine tools that perform cutting and drilling operations
- Choose AC or DC models
- DC sensors offer short-circuit, reverse polarity and surge suppression protection
- Extra sealing and oiltight cable protects against oil and water contamination

M18: 4 mm (0.16 in)
M30: 8 mm (0.32 in)

90 to 250 VAC, 50/60 Hz
10 to 30 VDC

SCR-NO (E2EZ-X□Y1)
10 to 200 mA at 250 VAC

NPN-NO (E2EZ-X□C1)
PNP-NO (E2EZ-X□B1)
100 mA at 12 VDC
200 mA at 24 VDC

5 to 12 Hz

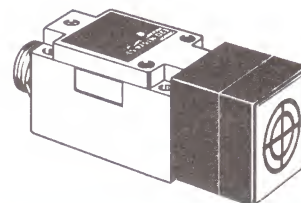
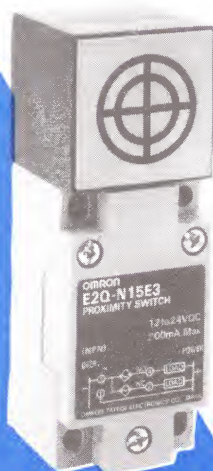
Nickel-plated brass housing

IP67

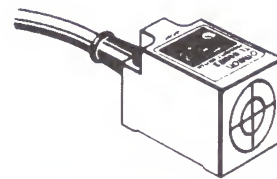
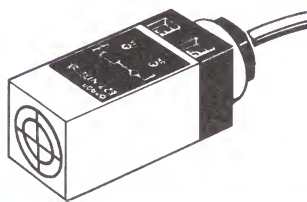
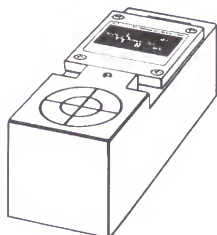
PROXIMITY SENSORS

LIMIT SWITCH AND BLOCK STYLE INDUCTIVE PROXIMITY SENSORS

Easy to design in, these sensors match the standard shapes of general-purpose limit switches and snap-action switches. The small block style sensors fit space-confined installations. Omron offers prewired, terminal screw and connector-ready sensors in AC and DC types. Some offer weld-field immunity. All have operation indicators.



MODEL	E2Q	
Dimensions	115.4 H x 40 W x 42 D mm (4.54 x 1.57 x 1.65 in)	
Description	<ul style="list-style-type: none"> ■ Versatile five-position head can be configured for side or end sensing to suit most applications ■ Limit switch style body ■ Weld-field immune models available (E2Q-□□□□-51 or -52) ■ Choose screw terminal or Mini-Change® style connector types 	
Detecting distance/ Body type	Shielded	15 mm (0.59 in)
	Unshielded	25 mm (0.98 in)
Supply voltage	20 to 264 VAC, 50/60 Hz 10 to 30 VDC	
Output	AC	SCR, 5 to 500 mA (E2Q-N□5Y4-□□)
	DC	Complementary NO and NC, 200 mA NPN (E2Q-N□5□E3-□□) PNP (E2Q-N□5□F3-□□)
Response frequency	25 Hz, 100 Hz (DC) 25 Hz (AC)	
Materials	Plastic housing	
Enclosure rating	IP67	



TL-YS

114 H x 40 W x 40 D mm
(4.49 x 1.57 x 1.57 in)

- Economical sensor in limit switch style housing
- Separate models for front, side and end sensing
- Operation indicator, all models
- DC models have reverse polarity protection

E2T

77.7 H x 34.5 W x 34.5 D mm
(3.06 x 1.36 x 1.36 in)

- Short limit switch style housing
- Weld-field immune type available (E2T-□□□□-51, -52)
- End sensing and side sensing models rotate to four positions for easy monitoring
- Choose prewired or Mini-Change® style connector type
- Output short-circuit protection for DC types and AC weld-field immune types

TL-N

25 H x 25 W x 38.5 D mm (TL-N5M□□)
(0.98 x 0.98 x 1.52 in)

- Space-saving small block style sensors
- Sensor can be mounted directly to metal
- Reverse polarity protection and surge suppressor circuit are built in
- Operation indicator, all models

15 mm (0.59 in)

12.5 mm (0.50 in)

5 mm (0.20) TL-N5M□□
10 mm (0.39 in) TL-N10M□□
20 mm (0.79 in) TL-N20M□□

90 to 250 VAC, 50/60 Hz
10 to 30 VDC

20 to 264 VAC, 50/60 Hz
10 to 30 VDC

90 to 250 VAC, 50/60 Hz
10 to 30 VDC

SCR-NO (TL-YS15MY1□-US)
SCR-NC (TL-YS15MY2□-US)
10 to 500 mA

SCR-NO (E2T-N13Y11-□□)
SCR-NC (E2T-N13Y21-□□)
5 to 500 mA

SCR-NO (TL-N□□MY1)
SCR-NC (TL-N□□MY2)
10 to 200 mA

NPN-NO (TL-YS15MC1□-US)
PNP-NO (TL-YS15MB1□-US)
200 mA

NPN-NO (E2T-N13E1□-□□)
NPN-NC (E2T-N13E2□-□□)
PNP-NO (E2T-N13F1□-□□)
PNP-NC (E2T-N13F2□-□□)
200 mA

NPN-NO (TL-N□□ME1)
NPN-NC (TL-N□□ME2)
200 mA

20 Hz (AC)
40 Hz (DC)

25 Hz, 100 Hz

10 Hz (AC)
40 Hz or 500 Hz (DC)

Plastic housing

Plastic housing

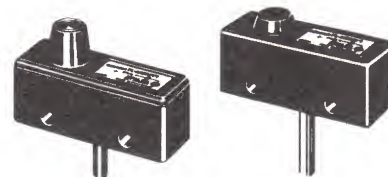
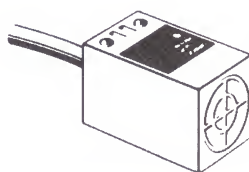
Plastic housing

IP66

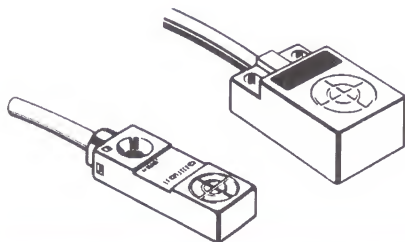
IP67

IP67

PROXIMITY SENSORS



MODEL		TL-Q	TL-M
Dimensions		17 H x 17 W x 32 D mm (0.67 x 0.67 x 1.26 in)	28.7 H x 17.5 W x 49.2 D mm (1.13 x 0.69 x 1.94 in)
Description		<ul style="list-style-type: none"> ■ Miniature DC block style sensor fits small spaces ■ Watertight to IP67 standards ■ Operation indicator, all models ■ Reverse polarity protection, standard 	<ul style="list-style-type: none"> ■ Basic switch style sensor is ideal for retrofitting mechanical positioning switches ■ Oil-tight housing meets IP67 ■ Switches up to 200 mA loads ■ Operation indicator, all models
Detecting distance/ Body type	Shielded	—	—
	Unshielded	5 mm (0.20 in)	2 mm (0.08 in) 5 mm (0.20 in)
Supply voltage		10 to 30 VDC	90 to 250 VAC, 50/60 Hz 10 to 30 VDC
Output	AC	—	SCR-NO, 10 to 200 mA (TL-M□MY1)
	DC	NPN-NO (TL-Q□□MC1) NPN-NC (TL-Q□□MC2) 200 mA	NPN-NO (TL-M□ME1) NPN-NC (TL-M□ME2)
Response frequency		500 Hz	20 Hz (AC) 250 Hz or 500 Hz (DC)
Materials		Plastic housing	Plastic housing
Enclosure rating		IP67	IP67



TL-W(M)

TL-W3M
5.5 H x 10 W
x 27 D mm
(0.22 x 0.39
x 1.06 in)

TL-W5□
10 H x 25 W
x 50 D mm
(0.39 x 0.98
x 1.97 in)

- Subminiature flat rectangular sensor fits tight spaces
- Mounts directly onto metal base or rail
- Water tight housing meets IP67
- Operation indicator, all models
- Choose unshielded plastic or shielded metal sensors

— 5 mm (0.20 in)

3 mm (0.12 in)
5 mm (0.20 in)

10 to 30 VDC

NPN (TL-W□MC1)	NPN-NO (TL-W5E1)
PNP (TL-W□MB1)	NPN-NC (TL-W5E2)
100 mA	PNP-NO (TL-W5F1)
	PNP-NC (TL-W5F2)
	200 mA

300 Hz, 500 Hz or 600 Hz

Plastic housing (TL-W□M)
Metal housing (TL-W)

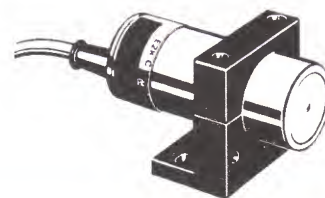
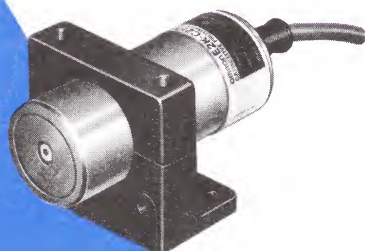
IP67

PROXIMITY SENSORS

CAPACITIVE AND SPECIAL-PURPOSE PROXIMITY SENSORS

Capacitive proximity sensors detect plastic, glass, wood, and water in addition to metallic objects. They even detect fill level in plastic tanks, bulk goods in jars and other materials inside non-metallic containers.

Omron's special-purpose proximity sensors include adjustable distance inductive proximity sensors with separate amplifiers, analog output sensors, inductive ring sensors and inductive coupler.



MODEL

E2K-C

Dimensions

34 dia. x 82 L mm
(1.34 x 3.23 in)

Description

- Capacitive sensor offers adjustable detecting distance
- Ideal for non-contact detection of glass, wood, water, oil, plastic and metal
- Allows indirect detection of materials in non-metallic containers
- Cylindrical, unthreaded sensor comes with mounting bracket

Detecting distance/
Body type

Shielded

—

Unshielded

3 to 25 mm, adjustable
(0.12 to 0.98 in)

Supply voltage

90 to 250 VAC, 50/60 Hz
10 to 40 VDC

Output

AC

SCR-NO (E2K-C25MY1)
SCR-NC (E2K-C25MY2)
5 to 200 mA

DC

NPN-NO (E2K-C25ME1)
NPN-NC (E2K-C25ME2)
PNP-NO (E2K-C25MF1)
PNP-NC (E2K-C25MF2)
200 mA

Response frequency

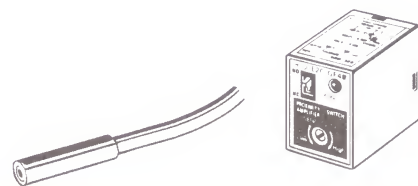
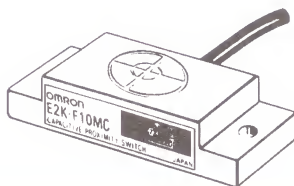
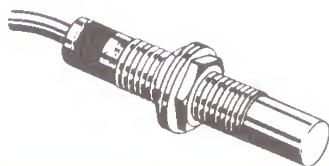
10 Hz (AC), 70 Hz (DC)

Materials

Plastic housing

Enclosure rating

IP67



E2K-X

M12 x 80 L mm (0.49 x 3.15 in)
M18 x 80 L mm (0.73 x 3.15 in)
M30 x 80 L mm (1.20 x 3.15 in)

- Threaded cylindrical capacitive sensors detect glass, wood, water, oil, plastic and metal
- Fixed sensitivity for simple installation
- Operation indicator, all models

E2K-F

10 H x 50 W x 20 D mm
(0.39 x 1.97 x 0.79 in)

- Flat, thin capacitive sensor fits space-confined installations
- Ideal for mounting directly to metal such as conveyor walls
- Detects glass, plastic, wood, water, oil and metals
- Operation indicator, standard

E2C

2 mm, 3.5 mm, M5, 5.4 mm,
M8, M12, M18, M30 and 40 mm dia.
15 to 50 mm L (0.59 to 1.97 in) sensors

- Inductive sensors with separate amplifiers provide adjustable detecting distance and differential travel to match application requirements
- Ideal for positioning and inspection of hard-to-detect objects
- Miniature sensors fit space-confined sites
- Separate amplifiers allow remote adjustments and monitoring
- Amplifiers include 1/16 DIN panel mount types, miniature socket-mount types and slim track-mount types
- Prewired E2C-JC4AP offers 40 ms OFF-delay and alarm output

2 mm dia.: 0.5 mm (0.02 in) E2C-CR5B
3.5 mm dia.: 0.8 mm (0.03 in) E2C-CR8A
M5, 5.4 mm dia.: 1 mm (0.04 in) E2C-X1A, E2C-C1A
M8: 1.5 mm (0.06 in) E2C-X1R5A
M12: 2 mm (0.08 in) E2C-X2A
M18: 5 mm (0.20 in) E2C-X5A
M30: 10 mm (0.39 in) E2C-X10A

M12: 4 mm (0.16 in) E2K-X4M□□
M18: 8 mm (0.32 in) E2K-X8M□□
M30: 15 mm (0.59 in) E2K-X15M□□

10 mm (0.39 in)

40 mm dia.: 20 cm (0.79 in) E2C-C20MA

90 to 250 VAC, 50/60 Hz
10 to 30 VDC

10 to 30 VDC

90 to 264 VAC, 50/60 Hz (E2C-AK4A)
10 to 30 VDC (E2C-AM4A, -GE4□, -GF4□,
-JC4AP, -WH4AF)

SCR-NO (E2K-X□□Y1)
SCR-NC (E2K-X□□Y2)
200 mA

—

SPDT relay, 2 A, 250 VAC (E2C-AK4A)
Transistor, 50 mA, 40 VDC

NPN-NO (E2K-X□□ME1)
NPN-NC (E2K-X□□ME2)
PNP-NO (E2K-X□□MF1)
PNP-NC (E2K-X□□MF2)
200 mA

NPN-NO (E2K-F10MC1)
NPN-NC (E2K-F10MC2)
100 mA

NPN and PNP, 200 mA (E2C-AM4A, E2C-WH4AF)
NPN, 100 mA (E2C-GE4A, E2C-GE4B, E2C-JC4AP)
PNP, 100 mA (E2C-GF4A, E2C-GF4B)

10 Hz (AC), 100 Hz (DC)

100 Hz (DC)

50 Hz to 1 kHz

Plastic housing

Plastic housing

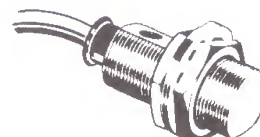
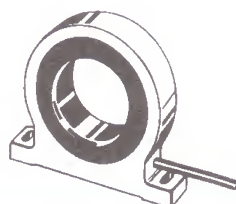
Metal sensor housing
Plastic amplifier housing

IP66

IP66

IP67 all sensors except
IP64 for 2 mm dia. sensor
IP40 all amplifiers

PROXIMITY SENSORS

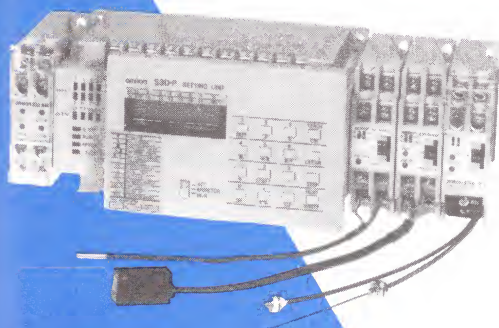


MODEL	F2LP-W		F92A
Dimensions	96 H x 91 OD x 26 D mm (3.78 x 3.58 x 1.02 in)		M18 x 46.5 L mm (0.73 x 1.83 in)
Description	<ul style="list-style-type: none"> ■ Inductive ring sensing head detects small moving metal objects anywhere in the ring ■ Separate amplifier provides 40 ms OFF-delay and both relay and transistor outputs 		<ul style="list-style-type: none"> ■ Inductive coupler transmits mechanical switch contact closure signal to inductive proximity sensors ■ Ideal for reliable detection of revolving, moving objects ■ Works with any M18 size inductive proximity sensor ■ Positive signal transmission even through glass or plastic walls
Detecting distance/ Body type	Shielded	—	—
	Unshielded	10 mm (0.39 in) ID F2LP-W10M 20 mm (0.79 in) ID F2LP-W20M 50 mm (1.97 in) ID F2LP-W50M 75 mm (2.95 in) ID F2LP-W75M 100 mm (3.94 in) ID F2LP-W100M	0.5 to 4.5 mm (0.02 to 0.18 in) transmitting distance
Supply voltage	120/240 VAC, 50/60 Hz (F2LP-WK4-US)		None required
Output	AC	SPDT relay, 2 A, 250 VAC	—
	DC	SPDT relay, 3 A, 30 VDC Transistor, 100 mA, 30 VDC	—
Response frequency	75 ms minimum interval between objects		1 ms maximum
Materials	Plastic or metal sensor housing Plastic amplifier housing		Metal housing
Enclosure rating	IP67 all sensors IP30 amplifier		IP67

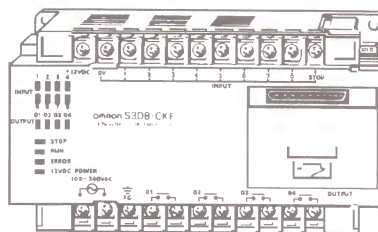
SENSOR CONTROLLERS

LOCAL CONTROL AND A DC POWER SUPPLY

Omron's sensor controllers improve machine productivity by bringing local, high-speed control. They provide logic and timing functions in addition to a plant-floor DC power source. Use analog sensor controllers with Omron's analog output sensors for a complete inspection, measurement and control package that can lighten the load on a PLC.



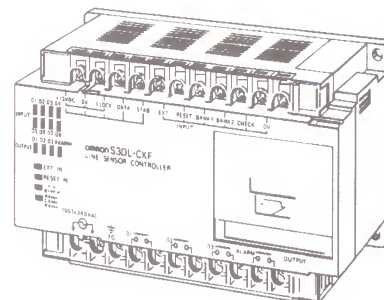
Discrete ON/OFF input



S3D8

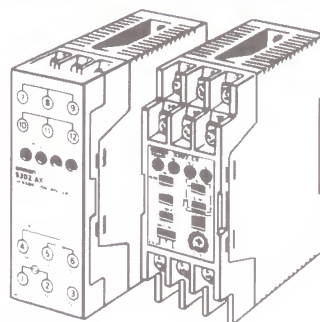
- Programmable sensor controller provides 4 outputs from 8 inputs, expandable up to 8 outputs
- Fast, 1 ms response time
- High-speed counter accepts encoder input up to 3 kHz
- 100-step program memory

Analog 4-20 mA input



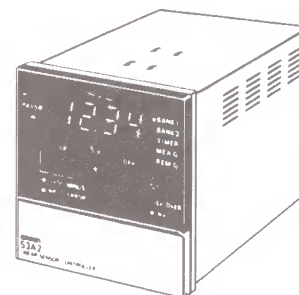
S3DL

- Controller provides 3 or 6 programmable outputs from one analog input
- 200-step program memory can be divided into two 100-step programs
- Programmable input ranges permit flexible inspection points



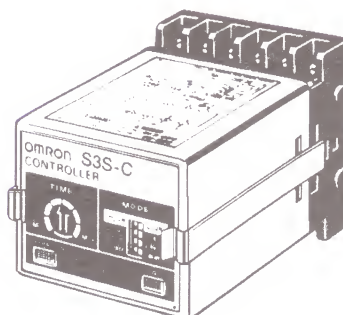
S3D2

- Slim track-mount controllers offer fast response times for high-speed inspection using one or two sensor inputs
- Built-in timer models offer ON-delay, OFF-delay and one-shot as well as logical AND and OR



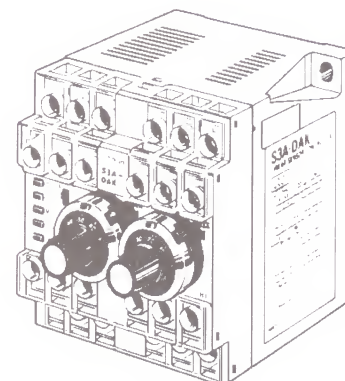
S3A2

- 1/4 DIN size panel mount controller provides 3 outputs from one analog input
- Deviation from set point determines high and low levels
- Store two sets of values in memory
- Field selectable ON-delay or one-shot output



S3S

- Socket-mount controllers provide DC power source
- Built-in timer models and logical AND, OR and invert models
- Fast response time



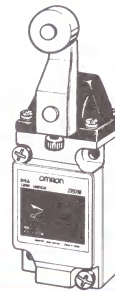
S3A-D

- Economical analog-to-digital conversion with three easy-to-set output points
- Both relay and transistor outputs provided simultaneously
- Selectable response time

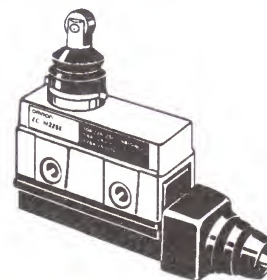
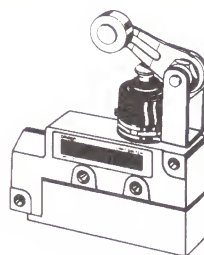
LIMIT SWITCHES

GENERAL-PURPOSE AND ENCLOSED SWITCHES

Omron offers a wide selection of form, fit and function equivalent switches to match popular models you may have already designed into equipment. But with Omron, you get outstanding performance backed up by 100% quality testing.



MODEL		D4A-N	WL
Dimensions		104.5 H x 42.0 W x 44 D mm (4.11 x 1.65 x 1.73 in)	94.1 H x 40.0 W x 41.5 D mm (3.70 x 1.58 x 1.63 in)
Description		Heavy-duty, general purpose limit switch offers convenient plug-in construction, providing ease of installation and field maintenance. Waterproof and oil-tight housing. Pilot duty and types with indicator are available.	General-purpose, double pole/double break limit switch offers a wide variety of standard, high-precision and overtravel types. Rugged waterproof, oil-tight and dust-proof construction. Indicator types available.
Switching capacity		10A continuous-120, 240, 480, 600 VAC, NEMA A600 (SPDT without indicator) 10A continuous-120, 240 VAC NEMA A300 (SPDT with indicator) 5A continuous-120, 240, 480, 600 VAC NEMA-B600 (DPDT, without indicator)	10 A max., 125 VAC inductive load
Contact configuration		SPDT or DPDT double break	SPDT double break
Mechanical service life (operations)		50 million min. (SPDT) 30 million min. (DPDT)	15 million min.
Connections		1/2-14 NPT conduit entrance Plated metal terminal screws	1/2-14 NPT conduit entrance Plated metal terminal screws
Degree of protection	UL	3, 4, 4X, 6P and 13	—
	NEMA	1, 2, 3, 3R, 4X, 5, 6P, 12 and 13	1, 2, 3, 3R, 4, 5, 6, 12 and 13
	IEC 144	IP67	IP67
Actuators		Side rotary type with separate cam tracking levers (10 standard types to choose from); side plunger type; top plunger type; wobble lever type	Side rotary type with separate cam tracking levers (10 standard types to choose from); side plunger type; top plunger type; wobble lever type

**D4B-5000**

101 H x 40 W x 43 D mm
(3.98 x 1.58 x 1.69 in)

General-purpose limit switch features positive snap-action contacts. A fail-safe mechanism forces the circuit open in case metal gets deposited between contacts or broken spring fragments enter the NC contacts. International approvals.

10 A max., 125 VAC
inductive load

SPDT double break with a NC contact for safety circuit and NO contact for interlock alarm.

30 million min.

1/2-14 NPT conduit entrance
Plated metal terminal screws

3, 4, 13

4, 12, 13

IP66

Side rotary types; top plunger type; wobble lever type

D4C

55 H x 40 W x 16 D mm
(2.17 x 1.58 x 0.63 in)

Compact, high-precision, enclosed limit switch comes prewired from factory for easy installation. Slim-line body design is ideal for limited access areas and ganged mounting.

5 A, 125 VAC
resistive load

SPDT (form C)

10 million min.

Prewired with 3 meters
(9.8 feet) cable

3, 4, 13

1, 3, 3R, 4, 5, 6, 12 and 13

IP67

Standard and sealed top plunger type

ZE/ZV/ZV2

102.1 H x 25.4 W x 86 D mm
(4.02 x 1.00 x 3.39 in)

Enclosed limit switch with large breaking capacity is available in side-mounting (ZE), diagonal side-mounting (ZV2) and base-mounting (ZV) housings.

15 A, 125 VAC
inductive load

SPDT (form C)

10 million min.

1/2-14 NPT conduit entrance
Plated metal terminal screws

—

1, 2, 3, 4, 5 (-N type)
1 (-Q type); 13 (ZV2-Q)

IP50 (-Q); IP65 (-N)

Top plunger type

ZC

65.4 H x 21.5 W x 60 D mm
(2.58 x 0.85 x 2.36 in)

Small, high-precision enclosed limit switch responds to less operating force than conventional limit switches. Good for gang mounting. Pre-wired terminal type available.

10 A, 125 VAC
inductive load

SPDT (form C)

10 million min.

Plated metal terminal screws
or prewired with 1 meter
(3.28 feet) cable

—

1, 2, 3, 4
1, 2, 3, 4, 5, 13 (-N type)

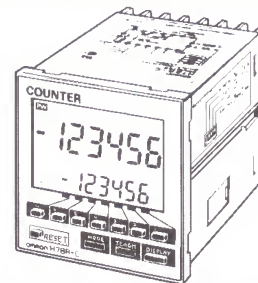
IP60; IP67 (-N type)

Standard and sealed top plunger type

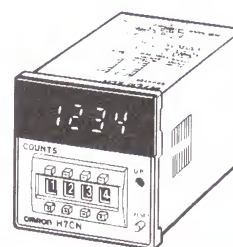
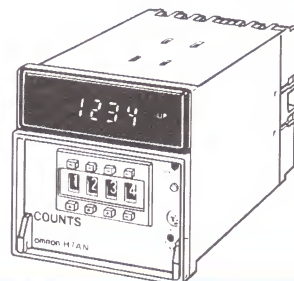
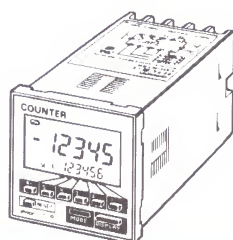
COUNTERS

PRESET COUNTERS AND TOTALIZERS

Omron offers preset counters with up, down and reversible counting in standard DIN sizes. Choose backlit LCD or LED displays and popular count-limit outputs and delays. Self-powered and PC board mount miniature totalizers with LCD displays, including tachometers, fit most counting jobs. Choose AC, DC and no-voltage contact inputs.



MODEL	H7BR
Dimensions	72 H x 72 W x 113 D mm (2.83 x 2.83 x 4.45 in)
Description	Easy to program DIN size counters with large LCD displays can be scaled to display engineering units instead of counts. Reversible plus/minus range counters are ideal for positioning and provide comparison of count value to preset for production control discrimination. Accepts high-speed inputs to 10,000 pulses per second.
Operation	UP, DOWN, reversible
Number of digits	6
Count input	No-voltage contact or voltage
Counting speeds	30 cps, 1 Kcps, 5 Kcps, 10 Kcps
Ranges	0 to 999,999 for preset models -99,999 to 999,999 for plus/minus
Reset system	External, manual, self-reset
Supply voltage	100 to 240 VAC, 50/60 Hz 24 VAC/12 to 24 VDC
Control output	SPST-NO contact, 3 A, 250 VAC Transistor for batch output
Memory protection	10-year battery back-up standard
Connections	Screw terminals
Mounting	Panel
Accessories	Panel adapter, panel cover, terminal cover
Approvals	UL, CSA



H7CR

48 H x 48 W x 106 D mm
(1.89 x 1.89 x 4.17 in)

Easy to program 1/16 DIN multi-function counters offer prescaling function to display in engineering units. Large backlit, 6-digit LCD displays. Available in standard, short (64 mm deep), and economy socket-mount versions. Choose single and double preset models as well as plus/minus range types for positioning. Contact and transistor outputs are available.

UP, DOWN, reversible

6

No-voltage contact or voltage

30 cps, 1 Kcps, 5 Kcps

0 to 999,999 for preset models
-99,999 to 999,999 for plus/minus

External, manual, self-reset

24 VAC or 100 to 240 VAC, 50/60 Hz
24 VAC/12 to 24 VDC

SPDT contact, 3 A, 250 VAC
Transistor, 100 mA, 30 VDC

10-year battery back-up standard

Screw terminals or 11-pin round sockets

Panel, track or surface

Panel adapters, sockets, DIN rail

UL, CSA

H7AN

72 H x 72 W x 115 D mm
(2.83 x 2.83 x 4.53 in)

Preset counter or totalizer with up to 8-digit LED display, offers six counting modes in reversible models. Choice of single or double presets. Offers assortment of one-shot delays after count limit. Provides 12 VDC power source to sensors. Offers both contact and solid-state outputs simultaneously.

Selectable UP/DOWN or reversible counting

2, 4, 6, or 8

5 to 30 VDC solid-state or no-voltage contact

5 Kcps (DC solid-state)
30 cps (no-voltage contact)

0 to 99, 9999, 999,999 or
99,999,999 counts

Power-off, external and manual

100 to 240 VAC, 50/60 Hz;
12 to 24, 48, 100 VDC

SPDT, 3 A, 250 VAC and solid-state
open collector 100 mA max., 30 VDC

10-year battery back-up available

Screw terminal

Panel

None

UL, CSA

H7CN

48 H x 48 W x 97.4 D mm
(1.89 x 1.89 x 3.83 in)

Plug-in preset counter offers easy-to-read 4-digit LED display. Available with memory back-up. Choose contact or solid-state output. Accepts quadrature input from rotary encoders. Fits 1/16 DIN panel cutouts.

UP, DOWN or reversible models

4

No-voltage contact

5 Kcps (DC solid-state)
30 cps (no-voltage contact)

0 to 9999 counts

Power-off, external and manual

100 to 240 VAC, 50/60 Hz;
12 to 48 VDC

SPST-NO, 3 A, 250 VAC or solid-state
open collector 100 mA max., 30 VDC

5-year battery back-up available

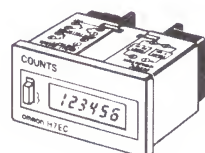
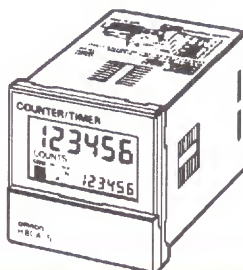
Plugs into 8-pin or 11-pin sockets

Panel, track or surface

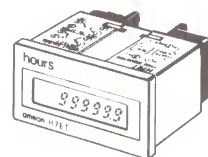
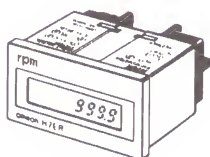
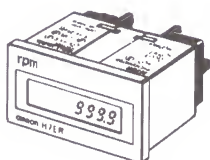
Sockets, DIN rail, panel adapters,
protective covers, back-up battery

UL, CSA

COUNTERS



MODEL	H8CA-S	H7EC
Dimensions	48 H x 48 W x 86 D mm (1.89 x 1.89 x 3.39 in)	24 H x 48 W x 60 D mm (0.94 x 1.89 x 2.36 in)
Description	Compact, field-configurable counter/timer offers single preset or reversible counting to 999,999 and three timing ranges. Six-digit LCD and status displays. Reset, start and gate outputs available in timing operation. Fits 1/16 DIN panel cutouts. Four modes determine sustained or one-shot control outputs after count or time limit is reached. Choose contact or solid-state output models.	Miniature totalizing counter with LCD display. Choose self-powered or PC board mount 3 VDC-powered models. Self-powered type has a built-in battery that protects memory for at least 7 years. PC board mount type fits standard DIP footprint. Manually solder to board or use optional 28-pin socket.
Operation	UP or reversible counting, time limit operation	UP counting
Number of digits	6	6 or 7
Count input	No-voltage contact or 5 to 30 VDC voltage	24 to 240 VAC, 6 to 240 VDC, no-voltage contact
Counting speeds	30 or 1K cps	20 cps (AC/DC voltage) 30 cps (DC or no-voltage) 1 Kcps (DC or no-voltage)
Ranges	0 to 999,999 counts 0 to 99999.9 minutes or hours 0 to 9999.99 seconds	0 to 999,999 or 9,999,999 counts
Reset system	External and manual reset	External and manual Power-off (H7EC-P)
Supply voltage	24 to 240 VAC, 50/60 Hz 12 to 120 VDC	Not required (H7EC) 3 VDC (H7EC-P)
Control output	SPDT relay, 3 A, 250 VAC Transistor, 100 mA, 30 VDC	Not applicable
Memory protection	10-year battery back-up standard	7-year battery (H7EC) Not available (H7EC-P)
Connections	11-pin round sockets	Screw terminal or wire wrap (H7EC) 8 solder terminals, DIP footprint (H7EC-P)
Mounting	Panel, track or surface	Panel (H7EC) PC board or 28-pin socket (H7EC-P)
Accessories	Panel adapter, sockets, DIN rail	Panel adapters (H7EC) 28-pin sockets (H7EC-P)
Approvals	UL, CSA	UL, CSA for AC/DC input



H7ER

24 H x 48 W x 30 D mm
(0.94 x 1.89 x 1.18 in)

Miniature tachometer with LCD displays for rpm or rps display. Choose self-powered or PC board 3 VDC models. Built-in battery powers counter for at least 7 years.

UP counting

4 or 5

5 to 30 VDC or
no-voltage contact

1 Kcps or 10 Kcps (H7ER)
1 pulse per revolution or
60 pulses per revolution
(H7ER-P)

0 to 1000 rps,
1000.0 rps, 10,000 rps,
1000.0 rpm

Input signal off (H7ER)
Power-off (H7ER-P)

Not required (H7ER)
3 VDC (H7ER-P)

Not applicable

7-year battery (H7ER)
Not available (H7ER-P)

Screw terminal or
wire wrap (H7ER)
8 solder terminals, DIP
footprint (H7ER-P)

Panel (H7ER)
PC board or 28-pin
socket (H7ER-P)

Panel adapters (H7ER)
28-pin sockets (H7ER-P)

H7ER-S

24 H x 48 W x 60 D mm
(0.94 x 1.89 x 2.36 in)

Miniature tachometer monitors speeds up to 10,000 rps or rpm. Built-in battery protects memory for at least 7 years.

UP counting

5

5 to 30 VDC or
no-voltage contact

1 Kcps

0 to 10,000 rps or rpm

Input signal off

5 to 24 VDC

Not applicable

7-year battery, standard

Screw terminals

Panel

Panel adapters

H7ET

24 H x 48 W x 60 D mm
(0.94 x 1.89 x 2.36 in)

Miniature time counter with LCD display. Choose self-powered or PC board 3 VDC powered models. Built-in battery powers counter and protects memory for at least 7 years.

UP counting

6 or 7

24 to 240 VAC,
6 to 240 VDC,
no-voltage contact

0.1 second (H7ET)
0.1 hour (H7ET-P)

0 to 99,999.9 or
999,999.9 hr, 99 hr 59 min
59.9 sec, 9999 hr 59.9 min,
3999 days 23.9 hr

External and manual (H7ET)
Power-off (H7ET-P)

Not required (H7ET)
3 VDC (H7ET-P)

Not applicable

7-year battery (H7ET)
Not available (H7ET-P)

Screw terminal or
wire wrap (H7ET)
8 solder terminals, DIP
footprint (H7ET-P)

Panel (H7ET)
PC board or 28-pin
socket (H7ET-P)

Panel adapters (H7ET)
28-pin sockets (H7ET-P)

UL, CSA for AC/DC input

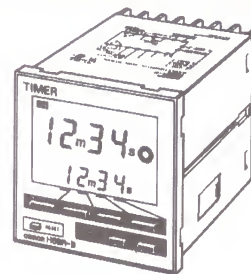
TIMERS

SOLID-STATE AND MOTOR TIMERS

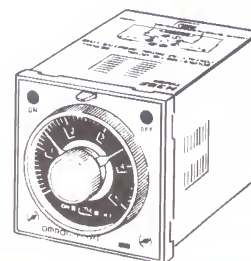
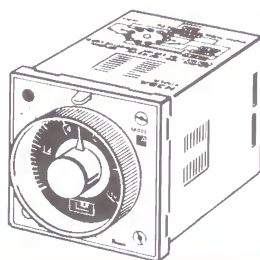
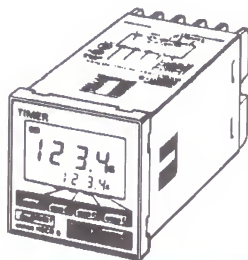
Choose Omron for versatile multi-function, multi-range timers to meet your needs.

Solid-state models perform a wide range of time delays as well as power-OFF and repeat cycle timing functions. Most fit standard DIN panel cutouts, so they are easy to design in. Slim track-mount timers and time-delay relays are available. Two programmable weekly time switches, both with memory back-up, meet special needs.

Omron motor timers provide dependable performance and a wide choice of ranges.



MODEL		H5BR
Type		Multi-mode
Dimensions		72 H x 72 W x 100 D mm (2.83 x 2.83 x 3.94 in)
Description		Easy-to-use DIN size timers offer 9 timing modes, a batch counting function to keep track of completed cycles and both contact and solid state outputs. Four level key protection provided.
Control outputs	Time limit	One SPDT, 5 A, 250 VAC and NPN open collector transistor, 10 to 100 mA, 30 VDC NPN transistor batch output
	Instantaneous	—
Operation modes		9 selectable modes including ON-delay, repeat cycle, OFF-delay, one-shot, interval, cumulative signal ON-delay, batch function
Ranges		0.001 second to 9999 hours
Display/indication		4-digit LCD alphanumeric display with backlighting
Resetting type		Self-resetting and external resetting depending on mode
Resetting time		0.5 second
Supply voltage		100 to 240 VAC, 50/60 Hz 24 VAC/12 to 24 VDC
Mounting		Panel
Accessories		Protective covers
Approvals		UL, CSA, SEV


H5CR
H3BA
H3BF

Multi-mode

ON-delay/Multi-mode

Repeat cycle

48 H x 48 W x 84 D mm
(1.89 x 1.89 x 3.31 in)

48 H x 48 W x 63.7 D mm
(1.89 x 1.89 x 2.51 in)

48 H x 48 W x 63.7 D mm
(1.89 x 1.89 x 2.51 in)

Compact 1/16 DIN timers with easy-to-read LCD and backlit displays allow flexible timing with outstanding repeatability. 9 control modes and four levels of key protection provided.

Analog set, solid-state timer offers 16 time ranges in a compact 1/16 DIN unit. Rotary switches select time unit, operation mode, and range selection. Plugs into standard 8-pin or 11-pin sockets.

Analog set, solid-state ON/OFF repeat cycle timer offers 16 time ranges in a compact 1/16 DIN unit. Independent ON time and OFF time periods are set using a dual knob. Plugs into standard 8-pin sockets.

SPDT relay, 5 A, 250 VAC or
NPN open collector, 5 to 100 mA,
30 VDC

DPDT or SPDT, 5 A, 250 VAC

DPDT, 5 A, 250 VAC

—

SPDT, 5 A, 250 VAC
(H3BA-8H only)

—

9 selectable modes including ON-delay,
repeat cycle, OFF-delay, one-shot,
interval, cumulative signal ON-delay

ON-delay only or selectable
ON-delay, repeat cycle, signal
interval/OFF-delay, signal OFF-delay

Repeat cycle

0.001 second to 999 hours

0.05 sec to 100 hr
(16 field-selectable ranges)

0.05 sec to 100 hr
(16 field-selectable ranges)

4-digit LCD alphanumeric display with or
without backlighting

Time up/Run LED

ON and OFF LED indicators

Self-resetting and external resetting
depending on mode

Self resetting and external resetting
(one or both)

Time limit resetting and self resetting

0.5 second

0.1 sec. max.

0.1 sec max.

24 or 100 to 240 VAC, 50/60 Hz
12 to 24 VDC

24, 100/110/120,
200/220/240 VAC, 50/60 Hz
12, 24, 48 or 110 VDC

100/110/120 or
200/220/240 VAC, 50/60 Hz
12, 24, 48 or 110 VDC

Panel, track, surface

Panel, track or surface

Panel, track or surface

Sockets for H5CR-L, protective
covers, DIN rail

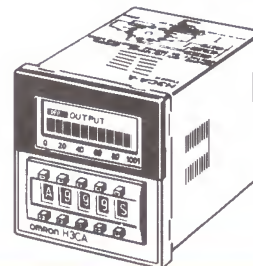
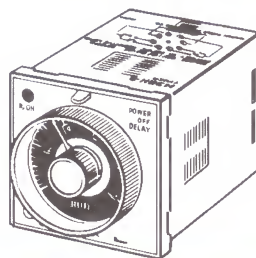
Sockets, time setting ring, protective
covers, adapters for panel mounting,
DIN rail

Sockets, protective covers, adapters for
panel mounting, DIN rail

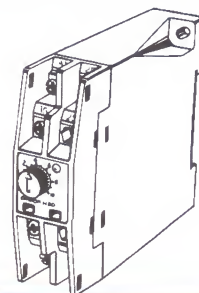
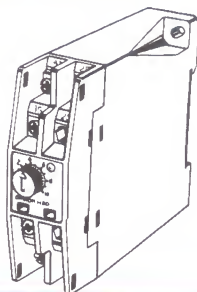
UL, CSA, SEV

UL, CSA, SEV

UL, CSA, SEV



MODEL	H3BH	H3CA
Type	Power OFF-delay	ON-delay/Multi-mode
Dimensions	48 H x 48 W x 63.7 D mm (1.89 x 1.89 x 2.51 in)	48 H x 48 W x 63.7 D mm (1.89 x 1.89 x 2.51 in)
Description	Analog set, solid-state power off-delay timer. Starts timing when power goes off to protect equipment and processes. 1/16 DIN size. Available with forced reset. Plugs into standard 8-pin sockets.	Digital set, solid-state timer with wide 0.1 sec to 9990 hour range in a compact, 1/16 DIN plug-in unit. Easy-to-read LCD time remaining bar graph and output status indicators. Many control modes to match most applications. Thumbwheel switch selects time unit, control mode, and time limit setting. Wide supply voltage range.
Control outputs	Time limit Instantaneous	DPDT or SPDT, 5 A, 250 VAC — SPDT, 3 A, 250 VAC (H3CA-8H only)
Operation modes	Power OFF-delay	ON-delay only or multi-mode model with ON-delay, repeat cycle, signal interval/OFF-delay, 2 types of signal OFF-delay, interval, cycle, and signal ON-delay/OFF-delay
Ranges	0.05 to 10 sec or 0.05 to 10 min (4 field-selectable ranges)	0.1 sec to 9990 hr (field-selectable time units from 0.1 sec to 10 hr x 3 digits)
Display/indication	Relay ON indicator	LCD output status and percent time remaining bar graph
Resetting type	Time limit resetting and forced resetting	Self resetting and external resetting (one or both)
Resetting time	0.1 sec (seconds range) 2 sec (minutes range)	0.5 sec (8-mode model) 0.1 sec (ON-delay model)
Supply voltage	24, 100/110/120 or 200/220/240 VAC, 50/60 Hz 24, 48, or 110 VDC	24 to 240 VAC, 50/60 Hz and 12 to 240 VDC (8-mode) 24, 100/110/120, 200/220/240 VAC, 50/60 Hz 12, 24, 48, 110 VDC
Mounting	Panel, track or surface	Panel, track, surface
Accessories	Sockets, time setting ring, protective covers, adapters for panel mounting, DIN rail	Sockets, protective covers, adapters for panel mounting, DIN rail
Approvals	UL, CSA, SEV	UL, CSA, SEV

**H3D/H3DX**

ON-delay

75 H x 22.5 W x 97 D mm
(2.95 x 0.89 x 3.82 in)

Slim line, analog set timer with ON-delay control output. Choose contact (H3D) or solid-state (H3DX) AC output. Offers 4 field-selectable sub-ranges within the range for tight control. Switches are located on the side of the unit. Built-in DIN rail clamp for easy track-mounting.

SPDT, 5 A, 250 VAC (H3D)
SCR, 5 mA to 1 A (H3DX)

ON-delay

0.1 sec to 10 min
0.3 sec to 30 min
(4 field-selectable ranges)

Time operation LED

Self resetting

0.1 sec

24, 100/110/120,
200/220/240 VAC, 50/60 Hz
12, 24, 48, 110 VDC
24 to 240 VAC/VDC (H3DX)

Track, surface

Protective cover, DIN rail

UL, CSA, SEV

H3DP

Signal OFF-delay

75 H x 22.5 W x 97 D mm
(2.95 x 0.89 x 3.82 in)

Signal OFF-delay timer with analog setting in slim housing. Choose 4 field-selectable sub-ranges within the range for tight control. Switches are located on the side of the unit. Built-in DIN rail clamp for easy track-mounting.

SPDT, 5 A, 250 VAC

Signal OFF-delay

0.1 sec to 10 min
0.3 sec to 30 min
(4 field-selectable ranges)

Time operation LED

Self resetting

0.1 sec

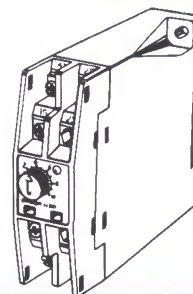
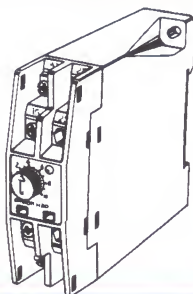
24, 100/110/120,
200/220/240 VAC,
50/60 Hz
12, 24, 48, 110 VDC

Track, surface

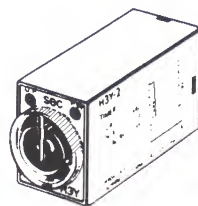
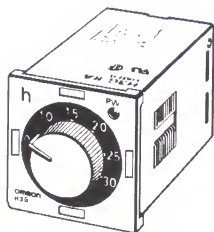
Protective cover, DIN rail

UL, CSA, SEV

TIMERS



MODEL		H3DH	H3DJ
Type		Power-OFF delay	Interval
Dimensions		75 H x 22.5 W x 97 D mm (2.95 x 0.89 x 3.82 in)	75 H x 22.5 W x 97 D mm (2.95 x 0.89 x 3.82 in)
Description		Power OFF-delay timer in slim housing. Starts timing when power goes off to protect equipment and processes. Analog setting. Built-in DIN rail clamp for easy track-mounting.	Interval timer in slim housing. Offers 4 field-selectable sub-ranges within the range for tight control. Switches are located on the side of the unit. Built-in DIN rail clamp for easy track-mounting.
Control outputs	Time limit	SPDT, 3 A, 250 VAC	SPDT, 5 A, 250 VAC
	Instantaneous	—	—
Operation modes		Power-OFF delay	Interval operation
Ranges		0.6 to 6 sec 0.6 to 60 sec (4 field-selectable ranges)	0.1 sec to 10 min 0.3 to 30 min (4 field-selectable ranges)
Display/indication		Timing operation	Timing operation LED
Resetting type		Time limit resetting	Time limit resetting
Resetting time		0.1 sec	0.1 sec
Supply voltage		24, 100/110/120, 200/220/240 VAC, 50/60 Hz 12, 24, 48, 110 VDC	24, 100/110/120, 200/220/240 VAC, 50/60 Hz 12, 24, 48, 110 VDC
Mounting		Track, surface	Track, surface
Accessories		Protective cover, DIN rail	Protective cover, DIN rail
Approvals		UL, CSA, SEV	UL, CSA, SEV

**H3G**

ON-delay

36 H x 36 W x 60 D mm
(1.42 x 1.42 x 2.36 in)

Low-cost solid-state time-delay relay with large switching capacity plugs into standard 8-pin sockets. Choose from 12 time ranges.

SPDT, 7 A, 125/250 VAC
DPDT, 5 A, 125/250 VAC

—

ON-delay

0.1 sec to 3 hr
(12 ranges)

Power ON LED

Self resetting

0.1 sec max.

100/110/120,
200/220/240 VAC,
50/60 Hz

Panel, surface

Panel mounting adapter, sockets

UL, CSA, SEV

H3Y

ON-delay

27.2 H x 20.7 W x 52.6 D mm
(1.07 x 0.82 x 2.07 in)

Subminiature solid-state time-delay relay with analog setting. Choose from 13 time ranges. Available with plug-in terminals for socket and track mounting or PC board terminals.

DPDT, 5 A, 220 VAC
4PDT, 3 A, 220 VAC

—

ON-delay

0.05 sec to 3 hr
(13 ranges)Power ON LED,
Time UP LED

Self resetting

0.1 sec max.

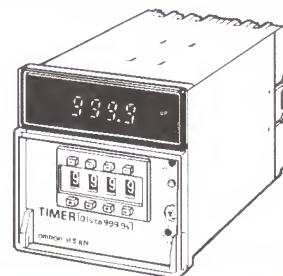
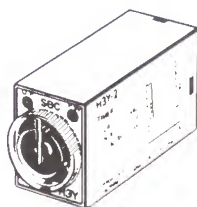
24, 120, 240 VAC, 50/60 Hz
12, 24, 48, 110 VDC

Socket, track, PC board

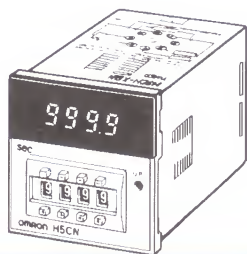
Sockets, hold down clips,
DIN rail

UL, CSA

TIMERS



MODEL	H3YU		H5AN
Type	Interval/One-shot		Multi-mode
Dimensions	28 H x 21.5 W x 52.6 D mm (1.10 x 0.85 x 2.07 in)		72 H x 72 W x 102 D mm (2.84 x 2.84 x 4.02 in)
Description	Subminiature solid-state timing relay with analog setting. Choose from 13 time ranges. Instantaneous operation. Available with plug-in terminals for socket and track mounting.		Wide range timer with large LED display offers 7 selectable operating modes. Both contact and solid-state open collector outputs are available simultaneously. Built-in 12 VDC power supply for external sensors. Convenient draw-out construction. Ranges are DIP switch selectable. Memory protection circuit available.
Control outputs	Time limit	3PDT, 3 A, 220 VAC/30 VDC	SPDT, 3 A, 250 VAC SSR, 100 mA, 30 VDC max.
	Instantaneous	—	—
Operation modes	ON-delay		Elapsed time, time remaining, time overflow, one-shot, delayed one-shot
Ranges	0.05 sec to 3 hr (13 ranges)		0.01 sec to 9999 hr (in 8 field-selectable ranges)
Display/indication	Power ON LED, Time UP LED		4 LED digits, time up LED indicator
Resetting type	Time limit resetting		Power-OFF, external, manual, automatic
Resetting time	0.1 sec max.		0.5 sec (power-OFF) 0.02 sec (external)
Supply voltage	120, 240 VAC, 50/60 Hz 12, 24, 48, 110 VDC		24 or 100 to 240 VAC, 50/60 Hz 12 to 24, 48, 100 VDC
Mounting	Socket, track		Panel
Accessories	Sockets, hold down clips, DIN rail		—
Approvals	UL, CSA		UL, CSA, SEV

**H5CN**

ON-delay

48 H x 48 W x 72.5 D mm
(1.89 x 1.89 x 2.85 in)

Compact plug-in timer with large LED display has selectable indication for elapsed time or time remaining. Choose contact or solid-state open collector output. Memory protection circuit available. Fits 1/16 DIN panel cut out, plugs into standard 8-pin and 11-pin sockets.

SPDT, 3 A, 250 VAC
SSR, 100 mA, 30 VDC max.

Elapsed time, time remaining

0.001 to 9.999 sec
0.01 to 99.99 sec
0.1 to 999.9 sec
1 sec to 99 min 59 sec
1 min to 99 hr 59 min

4 digit LED,
time up LED indicator

Power-OFF, external

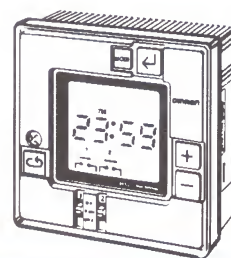
0.5 sec (power-OFF)
0.02 sec (external)

24 or 100 to 240 VAC, 50/60 Hz
12 to 48 VDC

Panel, track, surface

Sockets, protective cover, DIN rail

UL, CSA, SEV

**H5L**

Weekly timer

96 H x 96 W x 56.5 D mm
(3.78 x 3.78 x 2.22 in)

Solid-state weekly timer with large LCD display controls two independent 15-amp circuits. Manual override of outputs. Simple prompted programming. Cycle program repeats ON/OFF sequence over specified time period. Fits 1/4 DIN panel cut out. 10-year backup battery protects memory.

15 A, 125 VAC

Repeat cycle, individual program for each circuit

1 min to 23 hr 59 min

LCD; day, time, program,
circuit status

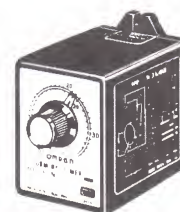
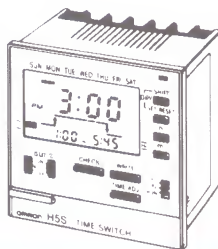
Programmed or manual

100 to 240 VAC, 50/60 Hz

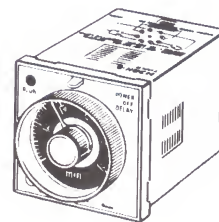
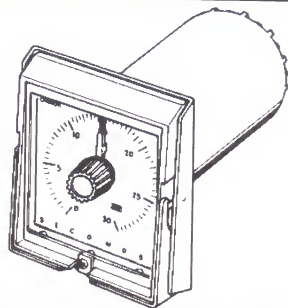
Panel, track, surface

Protective cover, DIN rail

UL, CSA, SEV



MODEL		H5S	STP
Type		Weekly timer	Motor timer
Dimensions		72 H x 72 W x 49 D mm (2.83 x 2.83 x 1.93 in)	61 H x 49 W x 81 D mm (2.40 x 1.93 x 3.19 in)
Description		Weekly timer has AM/PM display, 24 program steps, and quartz accuracy. ON/OFF, cycle, and pulse operations available. Backup battery protects memory for 5 years. LCD display shows output status and current or next program step.	Popular, compact motor timer available in 13 timing ranges. Offers high repeat accuracy. No restriction on mounting direction. Long service life. Choose panel or surface mounting models.
Control outputs	Time limit	SPST x 2, 15 A, 250 VAC	SPDT, 3 A, 250 VAC
	Instantaneous	—	SPDT, 3 A, 250 VAC
Operation modes		ON/OFF, repeat cycle, pulse	ON-delay or Signal-OFF delay (clutch signal)
Ranges		1 week	0.4 sec to 24 hr (in 13 ranges)
Display/indication		LCD: time, day, output status, program step	Moving pointer and timing indicator
Resetting type		Programmed or manual	Self-resetting or electric reset
Resetting time		—	0.5 sec max
Supply voltage		100 to 240 VAC, 50/60 Hz	120 VAC, 60 Hz or 240 VAC, 60 Hz
Mounting		Panel, surface, track	Panel, surface, track
Accessories		Protective cover, track adapter, DIN rail	Panel adapter, sockets, DIN rail
Approvals		UL, CSA	UL, CSA, SEV

**SYD**

Motor timer

105 H x 97 W x 105 D mm
(4.13 x 3.82 x 4.13 in)

Motor timer has drawout construction for easy maintenance. Choose from 13 timing ranges. Selectable control output operation available by changing terminal wiring.

SPDT or SPST-NC, 10 A, 150 VAC

SPDT or SPST-NO, 10 A, 150 VAC

ON-delay or Interval

0.1 sec to 24 hr
(in 13 ranges)

Power ON and time-out indicators

Self-resetting

0.5 sec max.

120 VAC, 60 Hz or
240 VAC, 60 Hz

Panel

UL, CSA, SEV

H2C

Motor timer

48 H x 48 W x 63.7 D mm
(1.89 x 1.89 x 2.51 in)

Compact motor timer offers 5 selectable sub-ranges for precise time limit control. Provides ON-delay and OFF-delay timing. Fits a standard 1/16 DIN panel cut out. Choose self-resetting or external power resetting models.

SPDT, 3 A, 250 VAC

SPDT, 3 A, 250 VAC

ON-delay, OFF-delay

1.25 sec to 30 hr
0.2 sec to 6 hr
0.5 sec to 12 hr
(5 field-selectable ranges)

Timing indicator

Self-resetting and electric resetting

0.5 sec max.

120 or 240 VAC, 50/60 Hz

Panel, track, surface

Panel adapter, sockets, hold down clips, protective covers, time setting ring, DIN rail

UL, CSA, SEV

PROCESS CONTROLLERS

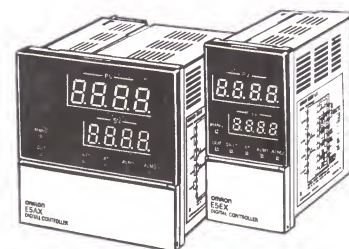
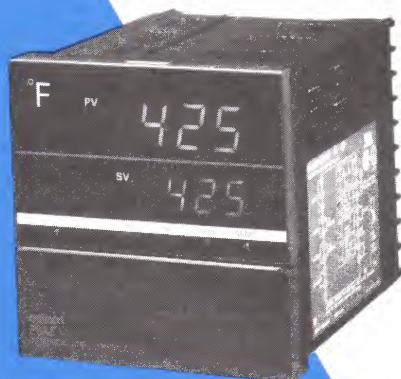
GENERAL-PURPOSE AND ADVANCED PROCESS CONTROL

Omron's controllers with field-selectable ranges, scales and sensor inputs offer advanced auto-tuning PID control, plug-in outputs and a 3-year warranty. They are today's best value in high-performance process and temperature control.

For specialized applications, Omron offers heater burnout alarms, dual outputs, heating and cooling outputs and Factory Mutual class controllers.

You'll find economical models for specific ranges and sensors available.

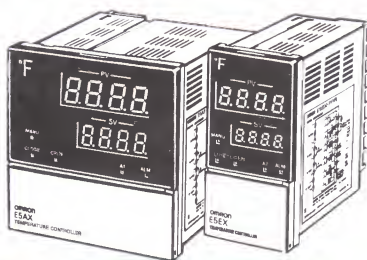
Choose 1/4, 1/8 or 1/16 DIN sizes.



MODEL E5AX-L/E5AX-M and E5EX-L/E5EX-M

Dimensions	96 H x 96 W x 112 D mm (3.78 x 3.78 x 4.41 in)	96 H x 48 W x 112 D mm (3.78 x 1.89 x 4.41 in)
Description	High-performance process controllers offer maximum flexibility for handling flow, level, pressure and humidity applications. Both 1/4 DIN E5AX and 1/8 DIN E5EX controllers have auto-tuning PID control combined with feed-forward circuitry for fast control response without overshooting. Field-selectable ranges and scaling, plug-in interchangeable control outputs and manual control override from the front panel ensure convenience in operation and long-term maintenance. Interchangeable communications boards available for E5AX models. Keypad lockout protects settings from tampering.	
Input and scale ranges	E5□X-L: 4 to 20 mA, 0 to 20 mA, 1 to 5 V, 0 to 5 V and 0 to 1 V E5□X-M: 0 to 100 mV, 0 to 10 mV, -10 to 10 mV	
Control modes	Auto-tuning PID with feed-forward circuit ON/OFF or manual output with balanceless/bumpless transfer	
Indication accuracy	±0.3% of full scale, ±1 digit	
Setting accuracy	—	
Optional functions	Communications output for E5AX: RS-232C, RS-422, RS-485, BCD, or 4 to 20 mA	
Supply voltage	100 to 240 VAC, 50/60 Hz	
Control outputs	Relay: SPDT, 5 A, 250 VAC SSR: SPST-NO, 1 A, 75-250 VAC Voltage: 12 VDC, NPN, 40 mA 24 VDC, NPN, 20 mA 24 VDC, PNP, 20 mA Current: 4 to 20 mA DC	

Approvals UL, CSA

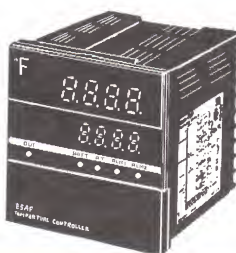


E5AX-P and E5EX-P

96 H x 96 W
x 112 D mm
(3.78 x 3.78
x 4.41 in)

96 H x 48 W
x 112 D mm
(3.78 x 1.89
x 4.41 in)

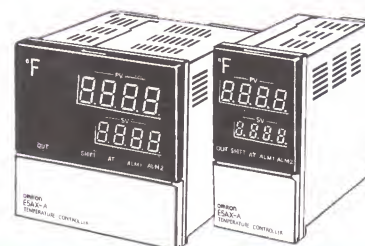
Use these temperature controllers for motorized valves with or without slidewire or potentiometer feedback operation. Choose 1/4 DIN E5AX-P or 1/8 DIN E5EX-P, each with field-selectable full PID or manual control. Both provide optimum control using feed-forward control circuitry and a motor calibration function. Nine temperature sensor inputs and eight alarm functions are field selectable to match your application. Communications available on E5AX-P.



E5AF

96 H x 96 W x 112 D mm
(3.78 x 3.78 x 4.41 in)

Real-time artificial intelligence applied to PID control improves response to process upsets without overshoot. Omron's 1/4 DIN controller uses auto-tuning PID control for start-up and temperature maintenance, then adds the finesse of fuzzy control for response to disturbances. Get field-selectable ranges, choice of 9 temperature sensor inputs, and plug-in interchangeable control outputs. Heater burnout alarm and communications functions available.



E5AX-A and E5EX

96 H x 96 W
x 112 D mm
(3.78 x 3.78
x 4.41 in)

96 H x 48 W
x 112 D mm
(3.78 x 1.89
x 4.41 in)

Omron's 1/4 DIN E5AX and 1/8 DIN E5EX controllers offer field-selectable temperature sensor inputs, scaleable ranges, outstanding accuracy, and plug-in interchangeable outputs for easy long-term maintenance. The large LED display shows both process and set values at a glance. Auto-tuning PID control combined with feed-forward circuitry provides fast control response without overshooting. Two alarm outputs available, each with 9 field-selectable functions. Communications available on E5AX.

Thermocouples:

Type K: -200° to 1300°C, -399° to 2300°F
Types J/L: -100° to 850°C, -100° to 1500°F
Types T/U: -200° to 400°C, -300° to 700°F
Type E: 0° to 600°C, 0° to 1100°F
Type R: 0° to 1700°C, 0° to 3000°F
Type S: 0° to 1700°C, 0° to 3000°F
Platinum RTD (100Ω):
-99.9° to 450.0°C, -99.9 to 800.0°F

Thermocouples:

Type K: -200° to 1300°C, -399° to 2300°F
Types J/L: -100° to 850°C, -100° to 1500°F
Types T/U: -200° to 400°C, -300° to 700°F
Type E: 0° to 600°C, 0° to 1100°F
Type R: 0° to 1700°C, 0° to 3000°F
Type S: 0° to 1700°C, 0° to 3000°F
Platinum RTD (100Ω):
-99.9° to 450.0°C, -99.9 to 800.0°F

Thermocouples:

Type K: -200° to 1300°C, -399° to 2300°F
Types J/L: -100° to 850°C, -100° to 1500°F
Types T/U: -200° to 400°C, -300° to 700°F
Type E: 0° to 600°C, 0° to 1100°F
Type R: 0° to 1700°C, 0° to 3000°F
Type S: 0° to 1700°C, 0° to 3000°F
Platinum RTD (100Ω):
-99.9° to 450.0°C, -99.9 to 800.0°F

Auto-tuning PID with feed-forward circuit or manual output with balanceless/bumpless transfer

Auto-tuning PID with feed-forward circuit and fuzzy scaling parameters and control intensity

Auto-tuning PID with feed-forward circuit ON/OFF

±0.3% of set value, ±1 digit

±0.3% of set value

±0.3% of set value

Communications output for E5AX-P:
RS-232C, RS-422, RS-485, BCD, or
4 to 20 mA

Heater burnout alarm using optional
current transformers
Communications output: RS-232C,
RS-422, RS-485, BCD, or 4 to 20 mA

Communications output for E5AX:
RS-232C, RS-422, RS-485, BCD, or
4 to 20 mA

100 to 240 VAC, 50/60 Hz

100 to 240 VAC, 50/60 Hz

100 to 240 VAC, 50/60 Hz

Relay output
Two SPST-NO, 3 A, 250 VAC

Relay: SPDT, 5 A, 250 VAC
SSR: SPST-NO, 1 A, 75 to 250 VAC
Voltage: 12 VDC, NPN, 40 mA
24 VDC, NPN, 20 mA
24 VDC, PNP, 20 mA
Current: 4 to 20 mA DC (not for heater
burnout alarm models)

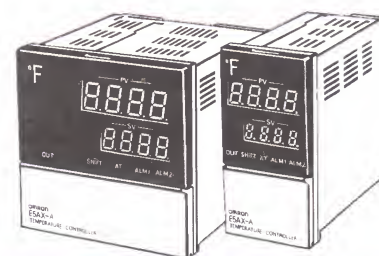
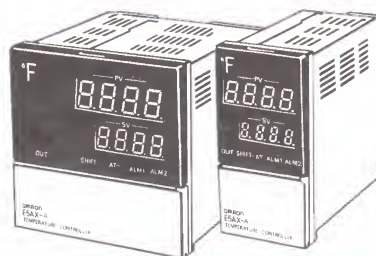
Relay: SPDT, 5 A, 250 VAC
SSR: SPST-NO, 1 A, 75 to 250 VAC
Voltage: 12 VDC, NPN, 40 mA
24 VDC, NPN, 20 mA
24 VDC, PNP, 20 mA
Current: 4 to 20 mA DC

UL, CSA

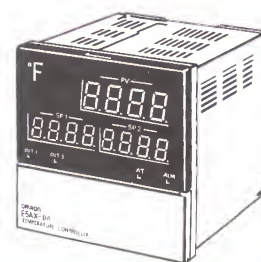
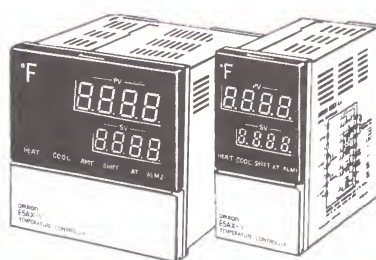
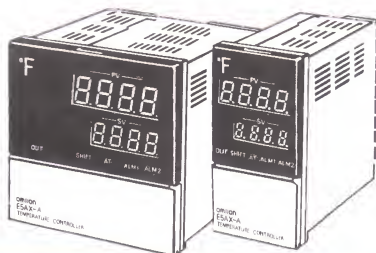
UL, CSA

UL, CSA

TEMPERATURE CONTROLLERS



MODEL	E5AX-H and E5EX-H		E5AX-FMF and E5EX-FMF	
Dimensions	96 H x 96 W x 112 D mm (3.78 x 3.78 x 4.41 in)	96 H x 48 W x 112 D mm (3.78 x 1.89 x 4.41 in)	96 H x 96 W x 112 D mm (3.78 x 3.78 x 4.41 in)	96 H x 48 W x 112 D mm (3.78 x 1.89 x 4.41 in)
Description	Detect heater burnout from the temperature controller to prevent damage to materials in process and to other heaters and equipment. Omron's 1/4 DIN E5AX-H and 1/8 DIN E5EX-H use a small current transformer to detect a drop in heater current consumption to signal heater burnout. They offer a separate burnout alarm in addition to the control alarm output. The multi-range, multiscale controllers offer outstanding accuracy and plug-in outputs to match your application. Auto-tuning PID control combined with feed-forward circuitry provides fast control response without overshooting. Communications available on E5AX-H.		Factory Mutual Class 3545 temperature controllers for industrial ovens and other critical applications offer manual alarm reset to ensure operator intervention. Omron's 1/4 DIN E5AX and 1/8 DIN E5EX provide two alarm outputs in addition to the plug-in interchangeable control output. These controllers offer auto-tuning PID with feed-forward circuitry to provide fast response without overshooting. For flexibility, the controllers accept many types of temperature sensor input.	
Input and scale ranges	Thermocouples: Type K: -200° to 1300°C, -399° to 2300°F Types J/L: -100° to 850°C, -100° to 1500°F Types T/U: -200° to 400°C, -300° to 700°F Type E: 0° to 600°C, 0° to 1100°F Type R: 0° to 1700°C, 0° to 3000°F Type S: 0° to 1700°C, 0° to 3000°F Platinum RTD (100Ω): -99.9° to 450.0°C, -99.9 to 800.0°F		Thermocouples: Type K: -200° to 1300°C, -399° to 2300°F Types J/L: -100° to 850°C, -100° to 1500°F Types T/U: -200° to 400°C, -300° to 700°F Type E: 0° to 600°C, 0° to 1100°F Type R: 0° to 1700°C, 0° to 3000°F Type S: 0° to 1700°C, 0° to 3000°F Platinum RTD (100Ω): -99.9° to 450.0°C, -99.9 to 800.0°F	
Control modes	Auto-tuning PID with feed-forward circuit ON/OFF		Auto-tuning PID with feed-forward circuit ON/OFF	
Indication accuracy	±0.3% of set value		±0.3% of set value	
Setting accuracy	—		—	
Optional functions	Communications output for E5AX-H: RS-232C, RS-422, RS-485, BCD, or 4 to 20 mA		Communications output for E5AX: RS-232C, RS-422, RS-485, BCD, or 4 to 20 mA	
Supply voltage	100 to 240 VAC, 50/60 Hz		100 to 240 VAC, 50/60 Hz	
Control outputs	Relay: SPDT, 5 A, 250 VAC SSR: SPST-NO, 1 A, 75 to 250 VAC Voltage: 12 VDC, NPN, 40 mA 24 VDC, NPN, 20 mA 24 VDC, PNP, 20 mA		Relay: SPDT, 5 A, 250 VAC SSR: SPST-NO, 1 A, 75 to 250 VAC Voltage: 12 VDC, NPN, 40 mA 24 VDC, NPN, 20 mA 24 VDC, PNP, 20 mA Current: 4 to 20 mA DC	
Approvals	UL, CSA		UL, CSA, F.M. Class 3545	



E5AX-NA and E5EX-NA

96 H x 96 W
x 112 D mm
(3.78 x 3.78
x 4.41 in)

96 H x 48 W
x 112 D mm
(3.78 x 1.89
x 4.41 in)

These controllers accept temperature sensor inputs used in high-temperature applications such as furnaces and semiconductor manufacturing. They provide outstanding control accuracy and offer plug-in interchangeable outputs to match your application. Choose 1/4 DIN E5AX or 1/8 DIN E5EX controllers. Both have two alarm outputs with 8 field-selectable alarm functions. Communications are available on E5AX. Auto-tuning PID control combined with feed-forward circuitry provides fast control response without overshooting.

E5AX-V and E5EX-V

96 H x 96 W
x 112 D mm
(3.78 x 3.78
x 4.41 in)

96 H x 48 W
x 112 D mm
(3.78 x 1.89
x 4.41 in)

For tough-to-control applications that require independent heating and cooling outputs, Omron offers 1/4 DIN E5AX-V and 1/8 DIN E5EX-V controllers. Select any of the plug-in interchangeable output units to match your control needs. In addition to auto-tuning PID control with feed-forward circuitry, these controllers offer separately adjustable hysteresis for heating and cooling outputs and an adjustable dead band for maximum control stability. Convenient 8-function alarm output is field selectable. E5AX-V offers communications.

E5AX-D

96 H x 96 W x 112 D mm
(3.78 x 3.78 x 4.41 in)

Get two control outputs from one sensor for accurate control without temperature distribution errors that can occur when more than one sensor is inserted at the same place. This multi-range 1/4 DIN controller offers plug-in interchangeable output units, communication capability, and outstanding accuracy. One output uses auto-tuning PID control with feed-forward circuitry, and the other uses ON/OFF control. A convenient 8-function alarm output is field selectable.

Thermocouples:

Type B: 100° to 1800°C, 300° to 3200°F
Type W/Re 5/26: 0° to 2300°C,
0° to 4000°F
Platinel II: 0° to 1300°C, 0° to 2300°F
Type N: 0° to 1300°C, 0° to 2300°F

Thermocouples:

Type K: -200° to 1300°C, -399° to 2300°F
Types J/L: -100° to 850°C,
-100° to 1500°F
Types T/U: -200° to 400°C, -300° to 700°F
Type E: 0° to 600°C, 0° to 1100°F
Type R: 0° to 1700°C, 0° to 3000°F
Type S: 0° to 1700°C, 0° to 3000°F
Platinum RTD (100Ω):
-99.9° to 450.0°C, -99.9 to 800.0°F

Thermocouples:

Type K: -200° to 1300°C, -399° to 2300°F
Types J/L: -100° to 850°C, -100° to
1500°F
Types T/U: -200° to 400°C, -300° to 700°F
Type E: 0° to 600°C, 0° to 1100°F
Type R: 0° to 1700°C, 0° to 3000°F
Type S: 0° to 1700°C, 0° to 3000°F
Platinum RTD (100Ω):
-99.9° to 450.0°C, -99.9 to 800.0°F

Auto-tuning PID with feed-forward circuit
ON/OFF

Auto-tuning PID with feed-forward circuit
ON/OFF

Auto-tuning PID with feed-forward circuit
ON/OFF

±0.3% of set value

±0.3% of set value

±0.3% of set value

Communications output for E5AX:
RS-232C, RS-422, RS-485, BCD, or
4 to 20 mA

Communications output for E5AX-H:
RS-232C, RS-422, RS-485, BCD, or
4 to 20 mA

Communications output for E5AX-D:
RS-232C, RS-422, RS-485, BCD, or
4 to 20 mA

100 to 240 VAC, 50/60 Hz

100 to 240 VAC, 50/60 Hz

100 to 240 VAC, 50/60 Hz

Relay: SPDT, 5 A, 250 VAC
SSR: SPST-NO, 1 A, 75 to 250 VAC
Voltage: 12 VDC, NPN, 40 mA
24 VDC, NPN, 20 mA
24 VDC, PNP, 20 mA
Current: 4 to 20 mA DC

Relay: SPDT, 5 A, 250 VAC
SSR: SPST-NO, 1 A, 75 to 250 VAC
Voltage: 12 VDC, NPN, 40 mA
24 VDC, NPN, 20 mA
24 VDC, PNP, 20 mA
Current: 4 to 20 mA DC

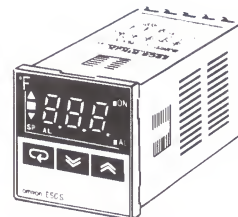
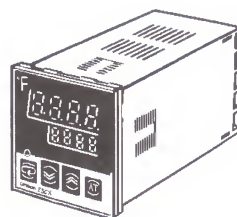
Relay: SPDT, 5 A, 250 VAC
SSR: SPST-NO, 1 A, 75 to 250 VAC
Voltage: 12 VDC, NPN, 40 mA
24 VDC, NPN, 20 mA
24 VDC, PNP, 20 mA

UL, CSA

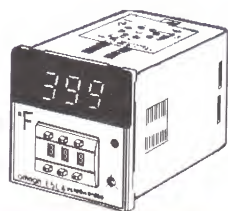
UL, CSA

UL, CSA

TEMPERATURE CONTROLLERS



MODEL	E5CX and E5CX-H	E5CS-X
Dimensions	48 H x 48 W x 112 D mm (1.89 x 1.89 x 4.41 in)	48 H x 48 W x 100 D mm (1.89 x 1.89 x 3.94 in)
Description	Compact, 1/16 DIN controller shows both process and set point temperatures in one easy-to-read display. Nine-function field-selectable alarm. Thermocouple input models accept 10 different types. Heater burnout detection models (E5CX-H) are available to prevent damage to materials in process and to other heaters and equipment. All have auto-tuning PID control combined with feed-forward circuitry for fast control response.	Multi-range, 1/16 DIN controller offers field-selectable PID control with auto-turning or ON/OFF control. An 8-function alarm output is standard. Large display shows process value, direction of deviation from set point, and output and alarm status. Features input shift, diagnostics, tamper-proof settings, and memory backup.
Input and scale ranges	Thermocouples: Type K: -200° to 1300°C, -399° to 2300°F Types J/L: -100° to 850°C, -100° to 1500°F Types T/U: -200° to 400°C, -300° to 700°F Type E: 0° to 600°C, 0° to 1100°F Type B: 100° to 1800°C, 300° to 3200°F Type N: 0° to 1300°C, 0° to 2300°F Type R/S: 0° to 1700°C, 0° to 3000°F Platinum RTD (100Ω): -99.9° to 450.0°C, -99.9 to 800.0°F	Thermocouple models: Type K (6 ranges): 0° to 999°C, 0° to 999°F Type J (5 ranges): 0° to 999°C, 0° to 999°F Platinum RTD (9 ranges): -50° to 400°C, 0° to 800°F Thermistor (10 ranges): -50° to 300°C, -50° to 600°F
Control modes	Auto-tuning PID with feed forward circuit ON/OFF	Auto-tuning of PID or ON/OFF
Indication accuracy	±0.3% of set value	±0.5% of full scale
Setting accuracy	—	—
Optional functions	Heater burnout detection (use current transformer)	—
Supply voltage	100 to 240 VAC, 50/60 Hz	100 to 240 VAC, 50/60 Hz
Control outputs	Relay models (E5CX-R): SPST-NO, 3 A, 250 VAC Voltage models (E5CX-Q): 12 VDC, 20 mA with short-circuit protection Current models (E5CX-C): 4 to 20 mA DC	Relay models (E5CS-R□□X): SPDT, 3 A, 250 VAC Voltage models (E5CS-Q□□X): 12 VDC, 20 mA with short-circuit protection
Approvals	UL, CSA	UL, CSA



E5C4

48 H x 48 W x 86.7 D mm
(1.89 x 1.89 x 3.41 in)

Compact plug-in 1/16 DIN controller has large, easy-to-read LED display and dependable thumbwheel switch setting. With accuracy better than $\pm 2\%$ full scale, E5C4 is ideal for general-purpose control. Fits standard 8-pin sockets. Supplied with panel mounting adapter. Choose separate models for control mode, control output type, sensor input type and scale range.

Type K Thermocouple:
0° to 999°C, 32° to 999°F
Type J Thermocouple:
0° to 399°C, 32° to 999°F
Platinum RTD:
0.0° to 99.9°C, 32° to 199°F

ON/OFF or PD, separate models

$\pm 2\%$ of full scale

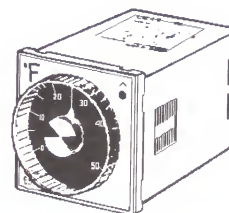
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110/120 or 220/240 VAC, 50/60 Hz

Relay output:
SPDT, 3 A, 250 VAC
Voltage output:
5 VDC, 10 mA

UL, CSA, SEV



E5C2

48 H x 48 W x 86.7 D mm
(1.89 x 1.89 x 3.41 in)

Economical, no-frills plug-in temperature controller offers accuracy better than $\pm 2\%$ full scale and a dual-scale analog setting dial. 1/16 DIN unit fits standard 8-pin sockets. Supplied with panel adapter for easy mounting of several units. Choose ON/OFF or PD control models.

Type K Thermocouple:
0° to 1200°C, 32° to 2192°F
Type J Thermocouple:
0° to 400°C, 32° to 752°F
Platinum RTD:
-50° to 400°C, -58° to 752°F
Thermistor:
-50° to 300°C, -58° to 572°F

ON/OFF or PD, separate models

—

$\pm 2\%$ of full scale

—

110/120 or 220/240 VAC, 50/60 Hz

Relay output:
SPDT, 3 A, 250 VAC
Voltage output:
5 VDC, 10 mA

UL, CSA, SEV

OTHER CONTROL PRODUCTS

COMPLETE YOUR CONTROL SYSTEM

Omron's wide variety of control products includes dependable cam positioners, power supplies, floatless level switches, and digital panel meters. They can help you complete a control system using a minimum number of suppliers.

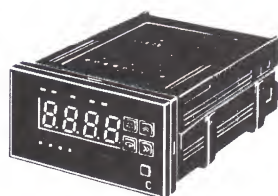
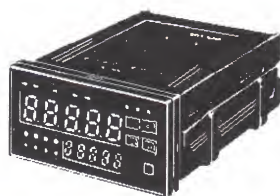


INTELLIGENT PANEL METERS

Omron's panel meters are easy-to-program, intelligent signal processors with flexibility for use as a display unit or as a device with control outputs or communications. Choose models that accept voltage, current, pulse and temperature input. Compact units fit standard 1/8 DIN panel cutouts and offer large, easy-to-read LED displays.



MODEL	K3TX
Input type	DC voltage -199.99 to 199.99 V 1.000 to 5.000 V DC current -199.99 to 199.99 mA 4.00 to 20.00 mA AC voltage 0 to 400.0 V AC current 0 to 10.000 A 0 to 19.999 mA
Features	Scale input into engineering units from front panel. Offers peak and valley detection, teach function and true root mean square (RMS) conversion on AC input units. UL and CSA approved.
Display	4 1/2-digit LED
Setting options	Front panel DIP switch settings
Control outputs	Relay, 5 A, 250 VAC/ 30 VDC Transistor, 50 mA, 24 VDC
Communications outputs	BCD output to a PLC

**K3TR**

Pulse inputs from NPN or PNP open collector transistor devices or no-voltage contact closure with 50 kHz input range and 0.006% accuracy.

K3TH

Switch selectable thermocouple types J, K, R, S, T, E, U and L and platinum RTD inputs. Also accepts thermocouple types PL-II, B, W/Re, and N for high-temperature applications.

Choose from 12 operating modes and four set value banks. Standard features include maximum/minimum value hold, input shift, display refresh period switch, set value write protection, and built-in sensor power supply.

Standard features include maximum/minimum value hold, input shift, display refresh period switch, and set value write protection.

5-digit LED

4-digit LED

Front panel membrane switches, set value LED or pushwheel switches

Front panel membrane switches, set value LED or pushwheel switches

Relay, 5 A, 250 VAC
Transistor, NPN or PNP
open collector, 50 mA, 24
VDC BCD, NPN open
collector, for PLCs Linear,
4 to 20 mA DC,
1 to 5 VDC or
0.1 mV/digit

Relay, 5 A, 250 VAC
Transistor, NPN or PNP
open collector,
50 mA, 24 VDC BCD, NPN
open collector,
for PLCs Linear,
4 to 20 mA DC,
1 to 5 VDC or
0.1 mV/digit

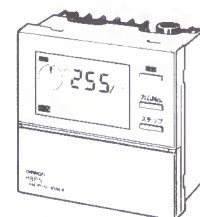
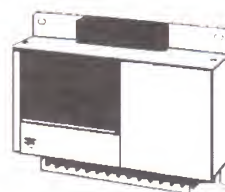
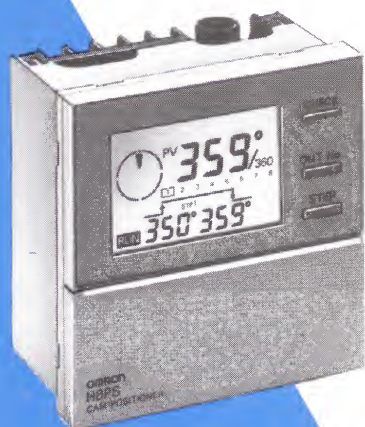
RS-232C
RS-485
RS-422

RS-232C
RS-485
RS-422

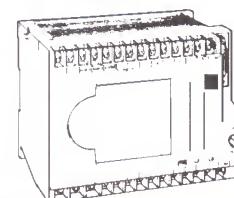
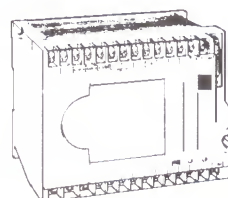
OTHER CONTROL PRODUCTS

CAM POSITIONER

Omron's programmable cam positioners reduce the set-up time and improve performance reliability compared to mechanical cam positioners. Choose absolute encoder or resolver input models.



MODEL	H8PR	H8PS
Input type	Absolute rotary encoder	Absolute rotary encoder
Display	Numeric, red LED	Numeric and angle position, backlit LCD
Functions	<ul style="list-style-type: none"> ■ 10 ON/OFF cycles per cam ■ Accepts 833 rpm input ■ Output can be programmed in 1° increments ■ Select clockwise or counter-clockwise rotation ■ Encoder origin designation ■ Memory protection ■ Teach function program ON/OFF angle from actual operation of the machine 	<ul style="list-style-type: none"> ■ 2 ON/OFF cycles per cam ■ Accepts 330 rpm input, ideal for automatic timing control applications ■ Output can be programmed in 1° increments ■ Choose clockwise or counter-clockwise rotation ■ Encoder origin designation ■ Teach function simplifies programming ON/OFF angle
Output voltages	8, 16 or 24, NPN or PNP open collector, 100 mA, 30 VDC	8 or 16, NPN or PNP open collector, 100 mA, 30 VDC

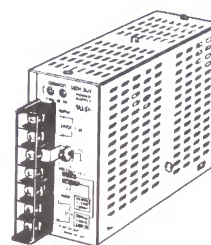
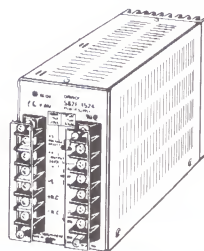


MODEL	3F88L-130	3F88L-132
Input type	Resolver	Resolver
Display	Numeric and angle position, LCD	Numeric and angle position, LCD
Functions	<ul style="list-style-type: none"> ■ 180 or 360 ON/OFF cycles per cam depending on resolver resolution (360 or 720) ■ Setting accuracy within 0.5° with 360 or 720 divisions per turn ■ 4 program storage banks ■ Key lockout prevent program tampering 	<ul style="list-style-type: none"> ■ 180 or 360 ON/OFF cycles per cam depending on resolver resolution (360 or 720) ■ 8 program storage banks ■ Setting accuracy within 0.5° with 360 or 720 divisions per turn ■ Magnetic 8K memory storage card and remote rotational angle/rpm display units, I/O relay terminals, are available options
Output voltages	16 outputs, transistor, 100 mA, 30 VDC	32 outputs, transistor, 100 mA, 30 VDC

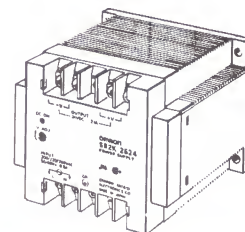
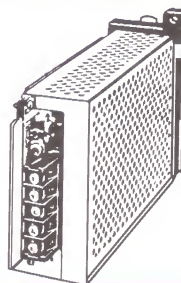
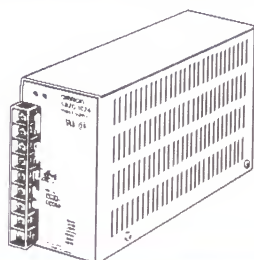
OTHER CONTROL PRODUCTS

POWER SUPPLIES

Omron's dependable power supplies step down AC line voltage to DC voltage. Choose from a wide range of power ratings and housing configurations to match your application. Design them into machines and control panels that use DC sensors and controllers.



MODEL	S82F	S82H-3
Special features	Ideal for driving solenoids and motors. Built-in over-voltage and overload protection, remote control and remote sensing functions. Field-selectable input voltages.	Noise immunity meets FCC Class B requirements. Field-selectable voltage range.
Number of outputs	1	1
Input voltages	100-120/200-240 VAC, 50/60 Hz	100-120/220-240 VAC, 50/60 Hz
Power ratings	150 W, 300 W	15 W, 30 W, 60 W, 100 W
Output voltages	12 VDC, 24 VDC	5 VDC, 12 VDC, 15 VDC, 24 VDC
Housing	Enclosed	Enclosed
Approvals	UL, CSA	UL, CSA

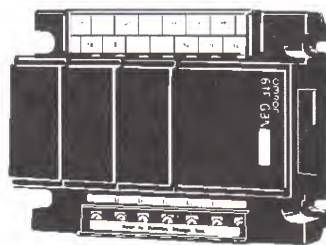
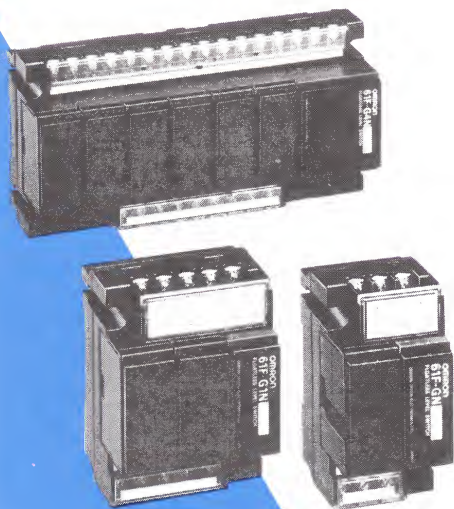


MODEL	S82G	S82J	S82K
Special features	Wide selection of output voltages to match most applications. Built-in overvoltage and overload protection, remote control and remote sensing functions. Field-selectable input voltages.	Economical single-voltage power supplies with one output. Designed for front mounting or track mounting with adapter.	Compact power supply ideal for PLC inputs and outputs, sensors and other control devices. Designed for surface or track mounting. Noise immunity meets FCC Class B.
Number of outputs	1	1	1
Input voltages	100-120/200-240 VAC, 50/60 Hz	100-120 VAC, 50/60 Hz or 200-240 VAC, 50/60 Hz	100-120 VAC, 50/60 Hz or 200-240 VAC, 50/60 Hz
Power ratings	30 W, 60 W, 100 W, 150 W	10 W, 25 W, 50 W, 100 W	7.5 W, 15 W, 30 W, 50 W
Output voltages	5 VDC, 12 VDC, 15 VDC, 24 VDC	5 VDC, 12 VDC, 15 VDC, 24 VDC	5 VDC, 12 VDC, 24 VDC
Housing	Enclosed	Enclosed or open frame	Enclosed
Approvals	UL, CSA	UL, CSA	UL, CSA

OTHER CONTROL PRODUCTS

FLOATLESS LEVEL SWITCHES

Omron offers a complete system of controllers, electrodes and accessories for automatic pumping control for supply and drainage of water and conductive liquids. Designed for easy installation and long-term maintenance, the floatless level switch system offers convenience features and reliability for most liquid-handling applications.



Controllers

All feature interchangeable relays and incorporate a surge arrester and induced lightning protection. The track mount controllers are compact for efficient panel space usage.

Models are wired for two basic application: automatic liquid supply or automatic supply and drainage control. Liquid supply only controllers offer pump idling prevention circuit, alarm for abnormally low liquid level, and a level display of water source and tank.

Controllers wired for fill and drain applications are available with an alarm for abnormally high level or abnormally high and low levels. Choose general-purpose types, those with an amplifier for long distances between controller and electrode, and high- and low-sensitivity types to match the liquid's specific resistance.

Electrodes

Omron's electrodes are offered in materials designed to withstand the corrosive effects and temperature conditions involved with long-term liquid handling. Each comes with an electrode, connecting nut for mounting in an electrode holder. Match your application to the electrode materials below.

304 stainless steel for purified city water, industrial water and sewage.

316 stainless steel for purified city water, industrial water, sewage and dilute alkaline solutions

Hastelloy B for sodium hydroxide, acetic acid, dilute sulfuric or hydrochloric acid

Hastelloy C for sea water, ammonia water, nitric acid

Titanium for acetic acid, dilute sulfuric acid and sea water

Electrode Holders

The electrode holder provides a convenient mounting and wiring point for the system. Choose holders for one to five electrodes, in materials and construction suitable for most applications.

For Information Call:

1-800-82-OMRON

OMRON[®]

OMRON ELECTRONICS, INC.

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Schaumburg, IL 60173

Authorized Distributor:

